

0000135558

RECEIVED

2012 MAR 30 P 4: 26

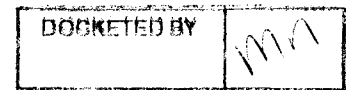
AZ CORP COMMISSION
DOCKET CONTROLJEFFREY W. JOHNSON
Regulatory Affairs Supervisor
State RegulationMail Station 9708
PO Box 53999
Phoenix, Arizona 85072-3999
Tel 602-250-2661
Jeffrey.Johnson@aps.com

ORIGINAL

March 30, 2012

Docket Control
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007Arizona Corporation Commission
DOCKETED

MAR 30 2012



RE: Arizona Public Service Company's 2011 Renewable Energy Standard (RES)
Annual Compliance Report
Docket Nos. E-01345A-10-0166 and E-01345A-10-0262

Pursuant to Arizona Administrative Code R14-2-1812(A), Arizona Public Service Company (APS or the Company) is required to file an annual report detailing the Company's compliance with the RES rules:

Beginning April 1, 2007, and every April 1st thereafter, each Affected Utility shall file with Docket Control a report that describes its compliance with the requirements of these rules for the previous calendar year. The Affected Utility shall also transmit to the Director of the Utilities Division an electronic copy of this report that is suitable for posting on the Commission's website.

Attached please find the Company's 2011 RES Compliance Report (Report). An electronic copy of the Report is being provided to Commission Staff's Utilities Division Director. In addition to the Report itself, APS is required to file:

IT IS FURTHER ORDERED that Arizona Public Service Company shall file a one to two page RES summary that will accompany the filings required in R14-2-1812 (Compliance Reports) and R14-2-1813 (Implementation Plans), and a PowerPoint presentation of the RES filing. In this filing, all spreadsheets shall be provided electronically in native format, such as Excel or PowerPoint. *Decision No. 72022, Page 29, Line 1.*

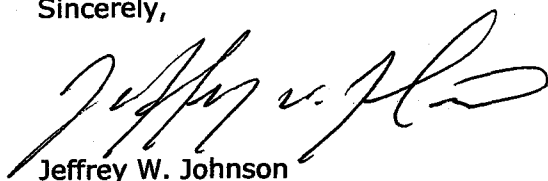
In compliance with this requirement, a summary that highlights key elements of the Report and a PowerPoint presentation summarizing APS's 2011 compliance efforts are also attached. Spreadsheets of all tables presented in the Report (in native format) will be provided to Commission Staff within the next two weeks.

The Report also contains information in compliance with Decision Nos. 71275, 72255, and 71646, and complies with additional reporting requirements pursuant to Decision No. 72022.

Finally, a portion of the Report contains competitively confidential information and has been redacted. A non-redacted version containing this information is being provided to Commission Staff under separate cover pursuant to an executed Protective Agreement in this docket.

If you have any questions regarding this information, please call me at (602)250-2661.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey W. Johnson", is written over the printed name.

Jeffrey W. Johnson

JJ/sl

cc: Steve Olea (w/CD containing electronic version of report)
Terri Ford
Ray Williamson
Jeff Pasquinelli
Barbara Keene
Brian Bozzo

**Arizona Public Service Company
2011 Renewable Energy Standard
Compliance Report Summary**

Arizona Public Service Company 2011 Renewable Energy Standard Compliance Report Summary

For calendar year 2011, the Arizona Corporation Commission established an annual Renewable Energy Standard (RES) requirement of 3.0 percent of a utility's 2011 total retail kilowatt-hour (kWh) sales, with 25 percent of that requirement to be satisfied through energy received from Distributed Energy (DE) resources.¹ For APS, these percentages equate to a total 2011 RES requirements of 846,310 megawatt-hours (MWh), of which 211,577 MWh were to be derived from DE resources.

In addition, per APS's 2009 Settlement Agreement,² the Company is required to procure new renewable energy resources with annual generation or savings of 1,700,000 MWh above those commitments made through 2008. The new resources are to be in service by December 31, 2015 and APS is on target to meet the Settlement requirement.

By year-end 2011, the APS fleet of utility-scale Renewable Generation facilities and DE systems produced 1,098,815 MWh of renewable energy. After deducting energy sales through the Green Choice Rates,³ APS's total production in 2011 was 964,086 MWh, meeting the 3.0 percent RES requirement for the year. This energy was obtained through Purchase Power Agreements (PPAs), APS-owned and operated projects, and DE systems sited at the customer's property.

APS managed total available RES revenues of almost \$146 million in 2011, including \$100 million of 2011 collections and \$46 million of prior year funds. Of this amount, approximately \$91 million was spent or committed towards DE incentives.⁴

Renewable Generation Highlights

The Company's portfolio of renewable generation advanced significantly in 2011:

- *AZ Sun Program.* The first three installations under the AZ Sun program reached commercial operation in 2011, providing a total of 45 megawatts (MW). These new solar resources include the Paloma facility near Gila Bend (17 MW), the Cotton Center facility near Gila Bend (17 MW), and the initial phase of the Hyder facility near Yuma (11 MW).
- *Perrin Ranch Wind Farm.* Perrin Ranch, located in Williams, AZ, was connected to the grid in December 2011 and is expected to reach commercial operation in the second quarter of 2012.
- *Solana Generating Station.* Solana, a 250 MW concentrating solar power (CSP) plant under construction near Gila Bend, was 39 percent complete at the end of 2011. Construction has also started on the transmission line which will connect Solana to the APS transmission system, and is expected to be complete by May of 2012.

¹ A.A.C. R14-2-1804(B) and R14-2-1805(B).

² Decision No. 71448 (December 30, 2009).

³ In Decision No. 70313 (April 28, 2008), the Commission determined that APS cannot count Green Choice sales toward meeting RES requirements.

⁴ Includes \$82.2 million in Up Front Incentive (UFI) payments and reservations, as well as \$9.7 million in Production Based Incentive (PBI) payments.

Distributed Energy Highlights

Customer participation in the APS Renewable Energy Incentive Program reached its highest level in program history in 2011, despite a significant reduction in the residential incentive for PV systems during the year. A total of 5,496 new DE systems were installed in 2011, representing more than 103 MW of new capacity, for a total DE program capacity of approximately 162 MW. This growth allowed APS to meet both its residential and non-residential DE compliance requirements for the first time since the inception of the RES program in 2007. In total, APS residential and non-residential DE programs achieved 135 percent of the Company's 2011 DE target.

Residential customers generated 117,926 MWh from DE resources in 2011, representing 111 percent of residential DE requirements. APS processed over 6,300 residential applications for DE incentives in 2011, and applications for leased systems rose substantially from 30 percent in 2010 to over 75 percent in 2011.

Non-residential customer DE installations produced 168,593 MWh of energy in 2011, representing 159 percent of non-residential DE requirements. By the end of 2011, installed capacity for those systems receiving production-based incentives (PBI) totaled slightly more than one-half of all DE capacity.

Additionally, the Company's Schools and Government Program began implementation in 2011. By the end of the year, 51 schools in 15 separate school districts applied to participate in the APS-owned portion of the program. A total of 80 applications for incentive funding under the third-party portion of the program were received, and 21 of these schools had been funded by the end of the year. Six government facilities received funding commitments, representing 1.2 MW of photovoltaic installations.

Other Program Highlights

In 2011, APS customer outreach continued to focus on educating both customers and industry stakeholders by providing essential details to inform participation with the Company's DE programs. The Company's focus on educational opportunities and customer satisfaction contributed to the continued high levels of customer participation and satisfaction in APS renewable program offerings throughout 2011.

APS also continues to evaluate data from its High Penetration Photovoltaic Deployment Study (HPS), a part of the larger Community Power Project – Flagstaff Pilot program. The HPS is focused on understanding design and grid operation considerations within a localized, single-feeder electricity distribution system. The study was funded through the Company's RES Research, Commercialization and Integration budget as well as a Department of Energy (DOE) grant, began in October 2009 and will continue into 2012.

Additionally, APS conducted two audits of its programs in 2011. Navigant Consulting, Inc. performed an external review of APS's DE project administration and determined that APS has acted appropriately and consistently in line with its Distributed Energy Administration Plan (DEAP) and other publicly posted program rules. An APS internal audit concluded that the Company had appropriate controls in place for its data tracking and report generation software package.

**Arizona Public Service Company
2011 Renewable Energy Standard
Compliance Report
PowerPoint Presentation**

Arizona Public Service Company 2011 Renewable Energy Standard Compliance Report

March 30, 2012



Regulatory Commitments

- **Arizona's Renewable Energy Standard (RES)**

- Requirement of 3.0% of 2011 retail kWh sales, Distributed Energy (DE) as 25% of total requirement

- **2009 APS Rate Case Settlement Agreement**

- Requires an additional 1.7 GWh above 2008 contracts and 2009 projects in-service
- Represents approximately 3.4 GWh by 2015
- Projected to be >10% of retail sales by 2015 (Double the RES target for 2015)

2011 RES Target

- Renewable Energy production equal to 3.0% of total 2011 retail sales

846,310 MWh

- Distributed Energy production equal to 25% of the annual target

211,577 MWh

- 50/50 split between Residential and Non-Residential categories

105,789 MWh

- Continued progress towards 2009 Settlement Commitments

*~3,400 MWh
by 2015*

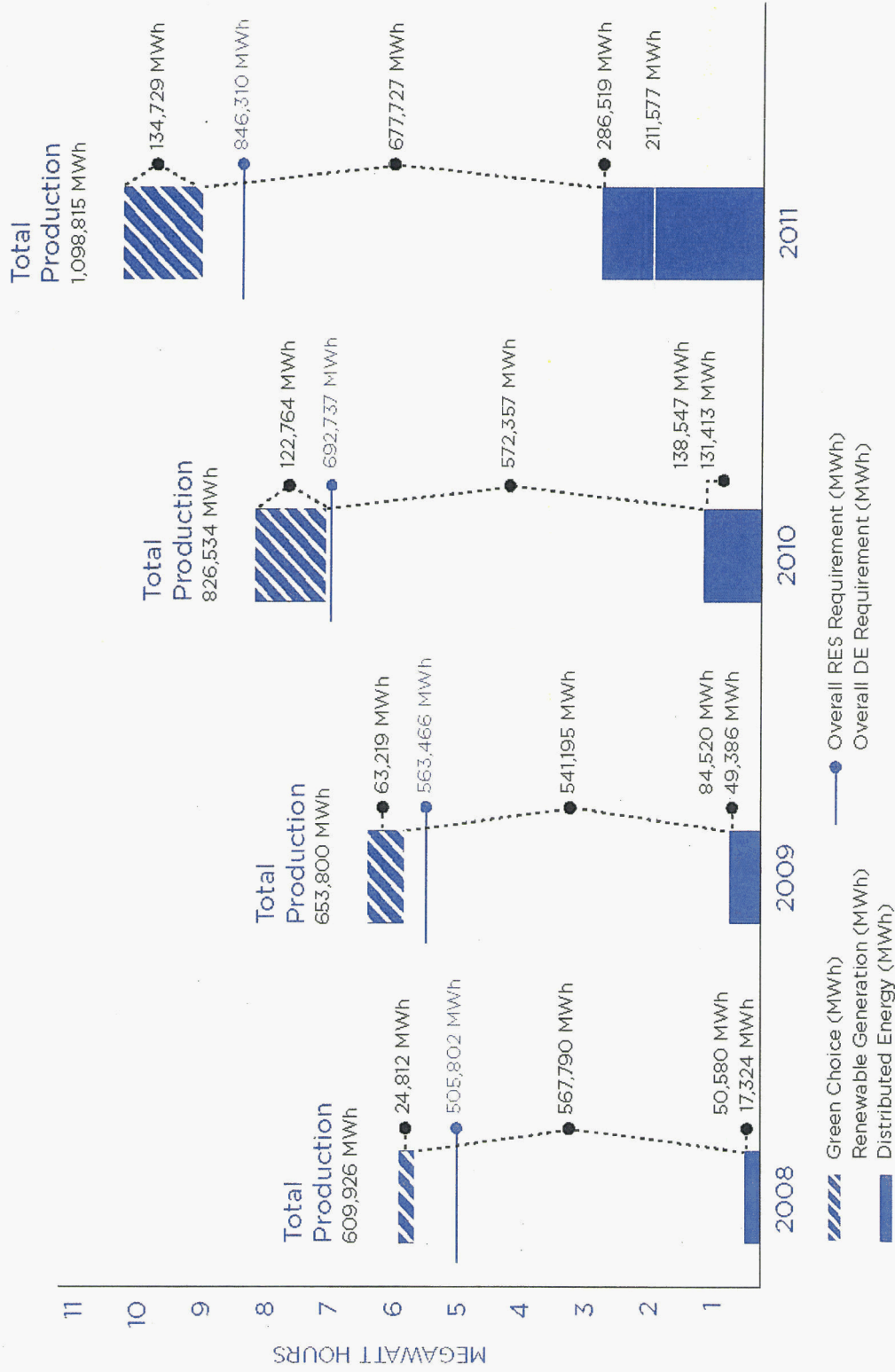
2011 RES Actual Production

- Total Renewable Energy 1,098,815 MWh
- Total RE Less Green Choice Sales 964,086 MWh
114% of target
- Total Distributed Energy 286,519 MWh
135% of target
- Residential DE 117,926 MWh
111% of target
- Non-Residential DE 168,593 MWh
159% of target

APS is in compliance with all RES requirements

2011 RES Results

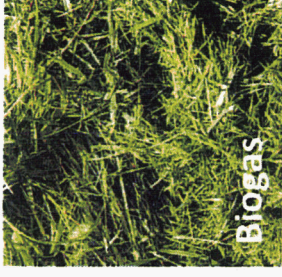
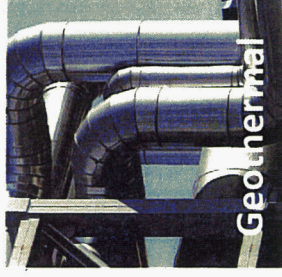
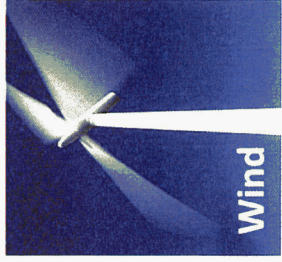
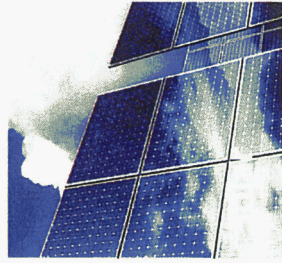
RENEWABLE ENERGY PERFORMANCE YEAR BY YEAR



Renewable Generation

- The Company's Renewable Generation portfolio includes a diversity of over 900 MW of resources currently in operation, under contract, or in planning.

2011 Installed Resources and Expected Pipeline



595 MW

289 MW

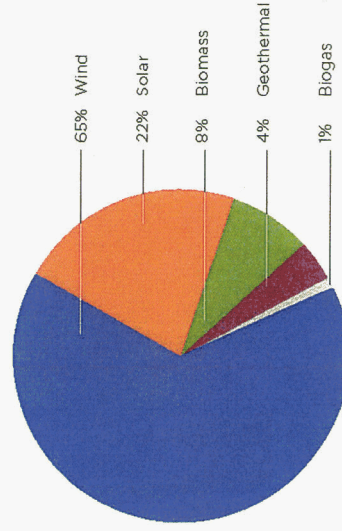
24 MW

10 MW

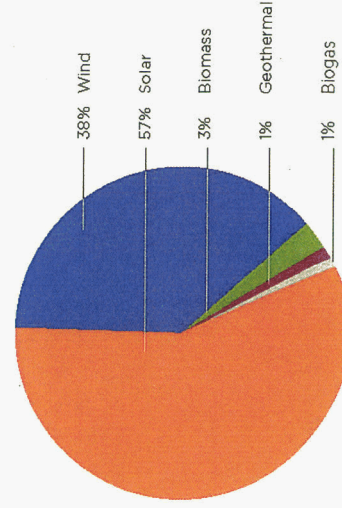
6 MW

2011 RENEWABLE GENERATION CAPACITY BY TECHNOLOGY

Installed Resources (MW)



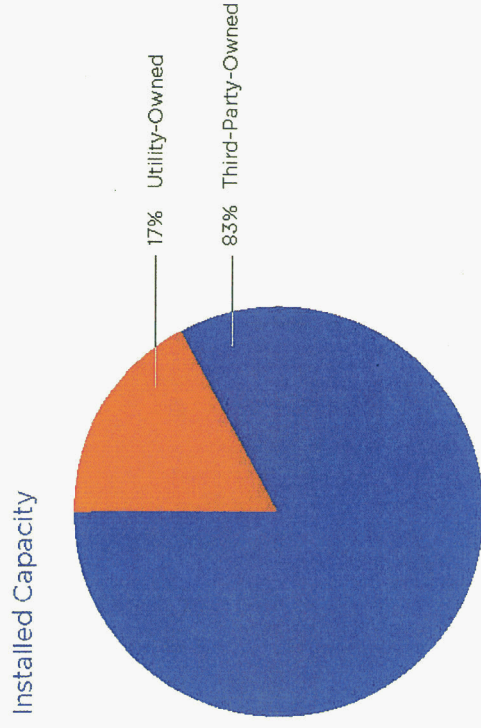
Installed & Expected Resources (MW)



Renewable Generation: Ownership

- As of the end of 2011, third-party developers owned 83 percent of installed Renewable Generation capacity, while APS owned 17 percent.
- A comparison of current installed capacity plus contracted and in-planning resources results in a nearly identical ownership split over time.

2011 UTILITY AND THIRD-PARTY OWNERSHIP



Transparency and Integrity

- APS conducted multiple audits in 2011 to ensure that new and ongoing renewable energy programs were administered with transparency and integrity.
 - Navigant Consulting, Inc. independently reviewed APS's consistency across project selection guidelines, deadline extensions, payments, and cancelled project funds.
 - The review concluded that APS has been acting appropriately and consistently.
 - An internal audit focused on APS's custom-developed residential data tracking software package and process controls.
 - The assessment concluded that controls for data input and tracking, report generation, and information security were functioning as intended.

Distributed Energy

- In 2011, 5,259 residential and 237 non-residential DE systems were installed, representing more than 103 MW of new capacity.
- APS achieved 135 percent of its total DE requirement, 159 percent of its non-residential DE requirement, and 111 percent of its residential DE requirement.
- In 2011, APS paid approximately \$53 million in residential incentives and nearly \$12 million in non-residential incentives.
- Approximately \$91 million was spent or committed towards DE incentives including \$82.2 million in Up Front Incentive (UFI) payments and reservations, as well as \$9.7 million in Production Based Incentive (PBI) payments.

Distributed Energy - Residential

- APS received a total of 6,305 residential incentive applications in 2011. Grid-tied PV applications were up three percent for the year, ending 2011 with 4,212 applications.
- The average incentive paid in 2011 was \$1.45/watt, down from \$2.25/watt in 2010.
 - Incentives decline from \$1.75/watt at the beginning of the 2011 budget year to \$1.00/watt in June 2011.
- Trends:
 - ➡ Applications for leased systems soared from 30 percent in 2010 to over 75 percent in 2011, increasing as incentive levels fell.
 - ➡ Average system size remains steady (6.9kWdc)

Distributed Energy Non-Residential

- Program had total of 92.5 MW of installed capacity by end of year
- APS funded 21 schools and six government facilities in its third-party owned Schools and Government program. For the APS-owned portion, 51 schools in 15 separate school districts had applied for participation and 7.2 MW of systems were eligible as of the end of 2011.
- Increased competition and program maturity resulted in the sharp decline of winning application ranking scores for both non-residential PBIs and UFIs
 - Market continued to thrive with application increases despite lower incentives paid.
- Bid scores below roughly translate to \$/kWh, where a winning score of 681 is approximately equal to a request of \$0.068/kWh

2011 Non-Residential Winning Bid Cutoff Scores

Bidding Period	Incentive Type		
	UFI	PBI (Medium)	PBI (Large)
Jan/Feb	465	1260	1003
Mar/Apr	401	1090	
May/Jun	375	1094	
Jul/Aug	349	824	890
Sep/Oct	319	681	
Nov/Dec	268	494	

Customer Outreach

- APS sought to optimize an impact across four primary goals:
 - I. Develop and promote educational opportunities and curriculum;
 - II. Protect potential customers' interests and encourage participation through relevant, informational messaging aimed at the value of DE for individuals' and Arizona's energy goals;
 - III. Improve customer satisfaction; and
 - IV. Increase messaging transparency for improved customer awareness and acceptance of DE technologies among APS's customer base

Research, Commercialization and Integration

- Ongoing Studies
 - High Penetration Photovoltaic Deployment Study
 - Photovoltaic Variability and Intermittency Study
 - Energy Storage Demonstration Project
 - AzSMART
 - Department of Energy Thermal Storage Demonstration
 - Electric Power Research Institute
- New Studies
 - Solar Water Heating Studies
 - Solar Thermal Augmentation

2011 Stakeholder Process

- APS conducted ten stakeholder meetings as part of the Company's commitment to transparency and collaboration.
 - Installers and customers updated on program results, process changes
 - Feedback solicited on APS's developing proposal for its 2012-2016 Renewable Energy Standard Implementation Plan filing.
- Collaboration with stakeholders included how to implement funding quarters for the residential DE program, and how to improve administration related to leased systems.
- Additional informational workshops were held for the Commission and its staff in August and September.

**Arizona Public Service Company
2011 Renewable Energy Standard
Compliance Report**



aps

2011 Renewable Energy Standard Compliance Report

March 30, 2012

Table of Contents

i.	Executive Summary	i
I.	2011 Renewable Energy Standard (RES) Results	1
A.	Compliance with RES Requirements.....	1
B.	RES Budget	4
C.	Renewable Energy Credit Bank Reconciliation	6
D.	Additional Reporting	6
II.	APS's Renewable Energy Standard Efforts.....	7
A.	Renewable Generation	7
1.	Renewable Generation Resources	8
2.	Contracts Terminated.....	14
3.	Renewable Generation Costs	14
B.	Distributed Energy	15
1.	Distributed Energy Installations, Capacity and Energy	15
2.	Internal and External Audits.....	17
3.	Distributed Energy Costs	17
4.	Up-Front Incentive Program	18
5.	Production-Based Incentive Program	19
6.	Residential Program	20
7.	Non-Residential Program	23
8.	2011 Schools and Government Program	25
9.	Distributed Energy Request for Proposal	26
10.	Community Power Project – Flagstaff Pilot	27
11.	Distributed Energy Leadership Program	28
12.	Innovative Renewable Energy Projects	29
III.	Renewable Rate Programs	30
A.	Green Choice Rate Program.....	30
1.	Green-e Certification	30
B.	Total Solar Rate Program	31
IV.	Additional RES Components	32
A.	Customer Outreach	32
1.	Education and Educational Curriculum.....	32

2. Protecting and Encouraging Customer Participation	33
3. Customer Satisfaction	33
4. Program Awareness	34
B. Research, Commercialization & Integration.....	35
1. Ongoing Studies	36
2. New Studies.....	37
Appendix A: RES Banking Reconciliation	40
Appendix B: Schools Funded from 2009 UFI Funds – Total Production.....	41
Appendix C: Independent Monitor Certifications	42

i. Executive Summary

For calendar year 2011, the annual Renewable Energy Standard (RES) requirement established by the Arizona Corporation Commission (ACC or Commission) was 3.0 percent of a utility's 2011 total retail kilowatt-hour (kWh) sales, with 25 percent of that requirement to be satisfied through energy received from Distributed Energy (DE) resources.¹ For Arizona Public Service (APS or the Company), these percentages equate to a total 2011 RES requirement of 846,310 megawatt-hours (MWh), of which 211,577 MWh were to be derived from DE resources.

In addition, per APS's 2009 Settlement Agreement, the Company is required to procure new renewable energy resources with annual generation or savings of 1,700,000 MWh above those commitments made through 2008.² The new resources are to be in service by December 31, 2015, and will exceed the RES requirement. As of the end of 2011, the Company is at approximately 32 percent of achieving this requirement.³

APS exceeded all levels of RES compliance requirements based on installed projects by year-end 2011.

Similar to 2010 program performance, 2011 again resulted in growth in utility-scale renewable generation and customer-sited DE production with an overall RES compliance of 114 percent, or 3.4 percent of APS's total retail sales. For the first time in its RES program history, APS fulfilled all levels of RES compliance (total production, overall DE, residential DE, and non-residential DE). Based on installed projects, the Company ended the year with 964,086 MWh of total RES-eligible production⁴ and 134,729 MWh of additional production through Green Choice Rate sales, for a combined total of 1,098,815 MWh. Of this amount, DE energy was 286,519 MWh.⁵ The energy in APS's portfolio was obtained through Purchase Power Agreements (PPAs), APS-owned and operated projects such as the AZ Sun Program, and DE sources located at the customer's property. APS expects the trend of full RES and DE compliance, including both residential and non-residential DE compliance, to continue in 2012.

¹ Ariz Admin Code R14-2-1804(B) and R14-2-1805(B) (2007).

² Decision No. 71448 (December 30, 2009).

³ The 32 percent includes Green Choice sales.

⁴ Production from Green Choice Rate sales cannot be counted for RES compliance purposes.

⁵ DE total MWh reported includes both actual and annualized production calculations.

Renewable Generation Solar Growth

APS brought several new facilities online in 2011 with a focus on expanding solar resources within the Company's utility-scale Renewable Generation (RG) portfolio.⁶

The first three installations under the AZ Sun Program reached commercial operation in 2011, totaling 45 megawatts (MW). These new solar PV facilities included Paloma (17 MW), Cotton Center (17 MW), and the first phase of Hyder I (11 MW), with the final phase of Hyder I (5 MW) placed in-service in February 2012. In the final two quarters of 2011, APS began receiving energy from 14.5 MW of solar PV plants acquired through power purchase agreements (PPA) for projects in Ajo (4.5 MW) and Prescott (10 MW). In total, APS installed approximately 60 MW of additional utility-scale solar resources in 2011.

APS issued Requests for Proposal (RFPs) for additional renewable resources under both third-party PPAs and the AZ Sun Program in order to ensure the Company's renewable resource portfolio grows as needed by 2015 to meet obligations under the RES requirement and the 2009 Settlement Agreement.⁷ Including the more than 470 MW of Renewable Generation resources currently under contract or in planning, APS's combined DE and Renewable Generation portfolio totaled more than 900 MW by the end of 2011. The figure below shows the technology balance within the Company's renewable portfolio will emphasize solar energy as more expected resources within the APS pipeline reach service through 2013.

APS Renewable Installed and Expected Capacity:



Solar

595 MW



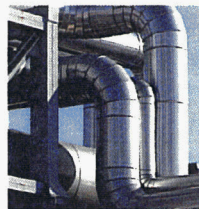
Wind

289 MW



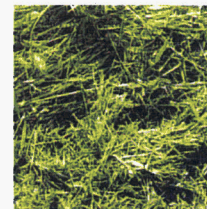
Biomass

24 MW



Geothermal

10 MW



Biogas

6 MW

Installed Distributed Energy Surpasses Compliance

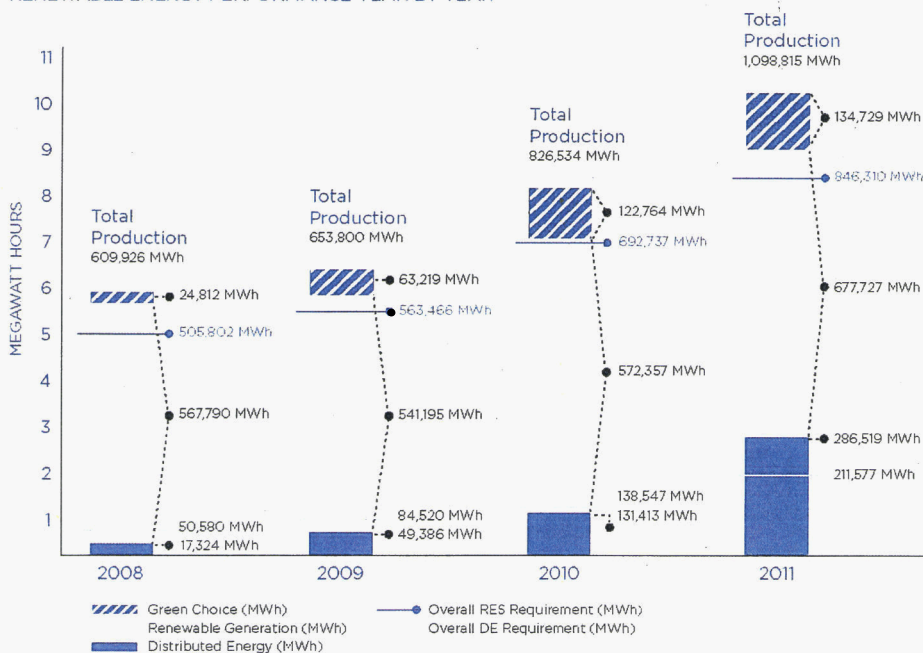
The Arizona RES requires that half of the energy requirement for DE resources comes from residential systems and half from non-residential systems. This provision equates to 105,789 MWh for each segment based on APS's 2011 retail sales. APS built upon its 2010 DE program success by surpassing both its 2011 residential and non-residential requirements for the first time since the inception of the RES

⁶ APS defines Renewable Generation as renewable resources interconnected on the utility side of the meter. Renewable Generation resources are generally utility-scale projects and apply to the RES total production requirement.

⁷ Decision No. 71448 (December 30, 2009).

program in 2007. Total residential production for 2011 was 117,926 MWh (111% of the requirement), and total non-residential production was 168,593 MWh (159% of the requirement).⁸ The DE installations in 2011 resulted in an additional 103 MW in new DE capacity in service in 2011. By year-end, APS had approximately 162 MW of cumulative installed DE capacity through the life of the program.

RENEWABLE ENERGY PERFORMANCE YEAR BY YEAR



Despite a decline in the residential incentive for PV systems from \$1.75/watt to \$1.00/watt in the 2011 budget year,⁹ APS continued to receive a high number of applications throughout the year. In 2011, the Company received an average of 88 applications for PV installations per week, as compared to 80 applications per week received in 2010. Additionally, the proportion of residential applications for leased systems rose substantially from 30 percent in 2010 to over 75 percent in 2011.

Much of APS's increase in installed capacity in 2011 for non-residential systems is attributable to large projects that received incentive reservations in 2010 but were installed in 2011. This trend contributed to APS meeting overall compliance and is expected to again contribute to a substantial increase in installed DE capacity in calendar year 2012. The total lifetime authorization for Production Based Incentive (PBI) projects through year-end 2011 is \$670 million.

⁸ Residential and non-residential production totals include both actual production from systems in place at the start of the year, as well as an annualized production for systems commissioned during the year.

⁹ The incentive levels are in reference to budget year 2011 and include some applications that were received in calendar year 2010 but were funded against the 2011 budget. Similarly, the 2011 budget year for incentives ended in November 2011 prior to incentives declining to \$0.75/watt.

Transparency and Integrity

APS conducted multiple audits in 2011 to ensure that new and ongoing renewable energy programs were administered with transparency and integrity. Navigant Consulting, Inc. independently reviewed APS's consistency across project selection guidelines, granting deadline extensions, completing payments, and transferring cancelled project funds back into accounts for available incentives. The review concluded that APS has been acting appropriately and consistently per APS's Distributed Energy Administration Plan (DEAP) and rules specified to program applicants on the APS website. An APS internal audit subsequently focused on the Company's residential data tracking software package and process controls. The assessment concluded that controls for data input and tracking, report generation, and information security were functioning as intended.

Community Programs and Outreach

In 2011, APS scaled back its outreach efforts surrounding overall program awareness and continued to focus on educating both customers and industry stakeholders by providing essential details to inform participation with the Company's DE programs, while protecting the customer's interest.

APS sought to optimize an impact across four primary goals:

- I. Develop and promote educational opportunities and curriculum;
- II. Protect potential customers' interests and encourage participation through relevant, informational messaging aimed at the value of DE for individuals' and Arizona's energy goals;
- III. Improve customer satisfaction; and
- IV. Increase messaging transparency for improved customer awareness and acceptance of DE technologies among APS's customer base.

The Company's focus in these areas contributed to the continued high levels of customer participation and satisfaction in APS renewable program offerings throughout 2011.

Integration Studies

The success of APS's and other utilities' renewable portfolios in recent years places increasing emphasis on how to fluidly integrate a high penetration of intermittent utility-scale and distributed renewable resources into a transmission and distribution system initially designed for energy resources with relatively low variability. Ensuring APS continues to provide customers with a safe and reliable grid from an operational level is an important extension of incorporating renewable resources into the Company's service territory. This requires a deeper understanding of the limitations of existing power quality devices – such as transformer tap changers, switched capacitors, and reclosers – as well as the capabilities of newer voltage regulation and balancing devices designed to mitigate the impacts of variable resources. Additionally, improved planning and forecasting within a high penetration environment will enable energy costs to remain low by minimizing the cycling of

spinning/non-spinning reserves and improving the accuracy of energy scheduling services.

APS continues to evaluate data from its High Penetration Photovoltaic Deployment Study (HPS) in relation to the larger Community Power Project – Flagstaff Pilot (Community Power Project). The High Penetration study is focused on understanding design and grid operation considerations within a localized, single-feeder electricity distribution system. The HPS, which was funded through the Research, Commercialization and Integration budget as well as a Department of Energy (DOE) grant, began in October 2009 and will continue through mid-2012.

Additional Programs and Initiatives

APS's Community Power Project achieved major milestones in 2011 and was close to completing its initial development. By the end of the year, 438 kW of PV systems were installed on residential rooftops and a 75 kW rooftop system was installed at the Cromer School. By April 2012, a 325 kW ground mounted system is expected to be in service at the Cromer School in addition to a 500 kW system at Doney Park, for a total of over 1.3 MW.

APS introduced its Schools and Government Program in 2011, which was developed in compliance with the 2009 Settlement Agreement in order to provide opportunities for schools and government facilities to deploy solar systems with no up-front costs. Decision No. 72022 granted APS authority to own up to 25 percent, or approximately 8 MWdc,¹⁰ of the total program capacity and the remaining 75 percent was available under APS's third party incentive program. By year end, APS had identified 7.2 MW of eligible school systems under its utility-owned model and reserved 2011's full \$17.5 million budget for lifetime commitments to third party-developed projects. APS will continue its Schools and Government Program in 2012 and is on target to achieve its 50,000 MWh goal by February 2014.

In addition to APS's efforts under the RES requirement, APS offers its customers renewable pricing plans such as the Green Choice Rate Program. At the close of 2011, 3,007 customers were subscribed to the family of Green Choice rates for approximately 134,729 MWh of energy.



Solar Electric Power Association (SEPA) Awards 2011

- #7 - 2010 Top Ten Utility Solar Rankings by the Solar Electric Power Association (SEPA)
- 2nd year in a row APS has ranked in SEPA's top ten for Annual Solar Megawatts produced
- 2010 SEPA Utility Community Outreach and Public Awareness Award
- 2010 SEPA Utility Innovation in Solar Program Design award

¹⁰ Solar nameplate capacity is commonly designated in direct current (dc) watts, while utility operations and service are provided in alternating current (ac).

I. 2011 Renewable Energy Standard (RES) Results

A. Compliance with RES Requirements

For calendar year 2011, the Arizona Corporation Commission (Commission) established an annual RES requirement of 3.0 percent of the utility's 2011 retail kilowatt-hour (kWh) sales, with 25 percent of the total requirement to be fulfilled with energy produced from Distributed Energy (DE) resources. A separate DE carve-out provision subsequently requires half of the total DE requirement to come from residential resources and half from non-residential resources. Based upon APS's 2011 energy sales, the Company's overall requirement for 2011 translates to 846,310 megawatt-hours (MWh) in total RES-eligible production for the year. The DE portion of the total requirement is 211,577 MWh (105,789 MWh each from both residential resources and non-residential resources). For the purposes of RES compliance tracking, a Renewable Energy Credit (REC) is defined as a kWh or kWh equivalent of eligible renewable resources; however, throughout the Compliance Report APS discloses its production in MWh.¹¹

Additionally, the Company's 2009 Settlement Agreement (Settlement)¹² adopted provisions that exceed the requirements of the RES. The Settlement required, among other provisions, that "APS shall acquire new renewable energy resources with annual generation or savings of 1,700,000 megawatt hours to be in service by December 31, 2015....".¹³ It further states that "these new resources shall be in addition to existing resources or commitments as of the end of 2008....".¹⁴ APS has identified that it must produce over 3.4 million MWh in order to comply with the Settlement by 2015. As of the end of 2011, the Company is at approximately 32 percent of achieving this requirement.¹⁵

APS achieved a major milestone for the first time in its RES program history: full compliance requirements were met and surpassed for both the residential and non-residential DE segments, as well as the Company's overall RES requirement. Previously, APS had achieved compliance in the residential and non-DE categories alone.

In 2011, the Company's Net Renewable Portfolio Position was 964,086 MWh, which was equivalent to 114 percent of 2011's overall RES requirement or 3.4 percent of APS's total retail sales.¹⁶ Total DE energy for the year reached 34 percent of the 2011 RES requirement or 135 percent of the DE-specific requirement, for a total of 286,519 MWh. An overview of APS's year-end installed portfolio is provided in Table 1. The table includes accounting adjustments for RES eligibility standards such as the

¹¹ Ariz. Admin Code §R14-2-1801(N) (2007).

¹² Decision No. 71448 (December 30, 2009).

¹³ Id.

¹⁴ Id.

¹⁵ The 32 percent includes of Green Choice sales.

¹⁶ Green Choice Rate retail sales can not be included in APS's RES-eligible energy for compliance purposes.

subtraction of Green Choice sales, the annualization of energy for DE systems installed mid-year, and a multiplier applied to in-state solar installations completed by end of year 2005.

TOTAL RENEWABLE ENERGY FOR 2011

1,098,815 MWh

Enough renewable energy to power approximately **80,000** homes.



493,917 Tons

of carbon dioxide emissions avoided.

The equivalent of taking more than **70,000** cars off the road.



The total MWh used for renewable energy includes both actual and annualized production.

Table 1:
2011 Overall Renewable Portfolio Results

	MW (capacity)	MWh (energy)
Renewable Generation		
Wind	190.0	537,989
Biomass ¹	24.5	139,688
Landfill Gas	2.9	17,871
Geothermal	10.0	72,143
Solar ²	65.1	41,561
Renewable Generation	292.5	809,252
Multiplier ³	-	3,044
<i>Subtotal: Renewable Generation</i>	292.5	812,296
<i>Less Green Choice Rate Sales⁴</i>		(134,729)
Renewable Generation Total		677,567
Distributed Energy^{5,6} (Cumulative)		
	MW (capacity)	MWh (energy)⁷
Solar Electric ⁸	161.7	233,215
Wind	0.2	443
Biogas	-	-
Solar Space Heating	n/a	2,218
Solar Water Heating	n/a	22,530
Solar Pool Heating	n/a	1,596
Geothermal	n/a	3,672
Solar HVAC	n/a	785
Wholesale DE	n/a	21,158
<i>Subtotal: Distributed Energy</i>	161.9	285,617
Multiplier ³	-	902
Distributed Energy Total	161.9	286,519
Net Renewable Portfolio Position (including all adjustments)⁹		964,086
RES Compliance Requirement (3.0% of retail sales)		846,310
<i>RES % of retail sales¹⁰</i>		<i>3.4%</i>
<i>Contribution to REC bank</i>		<i>117,776</i>

Notes to Table 1:

¹ Includes contractual capacity extension of 10MW beginning in Aug 1, 2010 through July 31, 2011.

² Excludes RES multiplier noted in note 3. In MWdc.

³ RES multiplier for in-state solar installations prior to December 31, 2005.

⁴ APS does not count Green Choice sales towards the RES pursuant to Commission Decision No. 70313.

⁵ Annualized energy production capacity.

⁶ Approximately 117,926 MWh Residential; 168,593 MWh Non-Residential.

⁷ DE energy production is annualized.

⁸ MWdc.

⁹ Equivalent to 114% of the total RES Goal.

¹⁰ Based on 2011 retail sales of 28,210,326 MWh.

B. RES Budget

Each year, APS develops a total renewable energy program budget based on estimated expenses for renewable generation and distributed energy programs and projects. Revenues to offset these expenses are collected through both the RES Adjustor and base rates. Revenue collected in a prior year that has been accrued and designated to offset expense in the current year is also available. As shown in the top section of Table 2, total available funding in 2011 was approximately \$146 million.

For the budget year 2011, the Company received authorization for a total RES budget of \$96.4 million, which included \$90.4 million to be collected through the RES surcharge and \$6 million through base rates.¹⁷ In a pleading to the Commission in December of 2011,¹⁸ APS estimated that approximately \$19 million existed for the Commission to use at its discretion. This amount included \$9.3 million in under-spent funds from the 2011 budget through October 2011.

Additionally, as part of the reconciliation of the 2011 program year, APS thoroughly reviewed the five-year life of the RES program (2007-2011), a period during which APS collected more than \$314 million of program funding. This review determined that another \$11.1 million of revenue collected through the life of the program remains for future program commitments.¹⁹ APS plans to propose in its 2013 RES Implementation Plan filing in July 2012 that any remaining funds not designated to specific programs or commitments are used to offset the 2013 RES program budget.

¹⁷ RES surcharge amounts are set through an annual forecast. Actual RES surcharge collections are shown in Table 2 and were slightly higher than expected collections.

¹⁸ Additional Status Update on RES Budget for November 2011 in Docket No. E-01345A-11-0264 dated December 8, 2011. In Decision No. 72737 (January 18, 2012), the Commission utilized this \$19 million (\$2 million in 2012 budget reductions, \$5.1 million in expected state tax credits, \$9.3 million in RES revenue collected in 2011, and \$2.6 million in RES revenue collected in 2009 to fund the Flagstaff CPP project) to offset the Company's 2012 RES budget.

¹⁹ This \$11.1 million consists of an accumulated \$7.3 million of revenue not spent during the years 2007-2010 and \$3.8 million of under-spent funds from November and December of 2011.

Table 2:
2011 RES Associated Revenues and Costs

Collected (Revenues)	
System Benefit Charge (SBC) Revenue ¹	\$ 6,000,000
Renewable Energy Standard (RES) Revenue	93,656,697
<i>Subtotal: 2011 Collections</i>	<i>99,656,697</i>
2010 Committed Accrual	33,625,486
Prior Years Collected and Unallocated Funds	12,678,124
<i>Subtotal: Prior Year Funds</i>	<i>46,303,610</i>
Total: Available Revenue	\$ 145,960,307
Expenses (costs)	
<i>Energy/Incentives</i>	
Renewable Generation Purchased Power	\$ 9,251,671
Paid Distributed Energy Incentives	64,529,790
Committed Distributed Energy Incentives ²	26,443,919
<i>Subtotal: Energy and Incentives</i>	<i>\$ 100,225,381</i>
<i>Non-Energy Costs</i>	
Administration & Implementation	8,186,329
Information Services	1,068,167
Research, Commercialization & Integration	784,295
Customer Outreach and Awareness Programs	2,854,419
<i>Subtotal: Non-Energy Costs</i>	<i>\$ 12,893,210</i>
<i>APS Owned Program Costs</i>	
APS-owned Solar Maintenance	\$ 101,092
Flagstaff CPP O&M	428,104
Flagstaff CPP Revenue Requirement	210,016
AZ Sun O&M	49,025
AZ Sun Revenue Requirement	5,071,308
Schools and Government O&M	37,011
Total: Expenses	\$ 119,015,147
Gross Balance (collected - expenses)	\$ 26,945,160
Carry Forward to 2012 ³	\$ (3,980,577)
Net Balance	\$ 22,964,583
Net Balance	\$ 22,964,583
2012 RES Program Offset ⁴	\$ 11,900,000
<i>Unallocated Balance</i> ⁵	<i>\$ 11,064,583</i>

Notes to Table 2:

¹ Collected from base rates.

² Funding commitments made but not yet paid through 2011.

³ Represents budget year 2011 commitments for Customer Outreach, Information Technology, RC&I, and AZ Sun commitments.

⁴ This amount consists of (1) \$9.3M of 2011 collections and (2) \$2.6M of Flagstaff Revenue Requirement underspend as per ACC Decision No. 72737.

⁵ This balance of appx \$11.1M represents, (1) \$3.8M of additional 2011 program underspend plus and (2) an additional \$7.3M through a reconciliation of 2007-2010 budgets.

C. Renewable Energy Credit Bank Reconciliation

APS updates its RES credit bank numbers annually. As approved in the Company's 2008 RES Implementation Plan,²⁰ APS will use RES-eligible banked energy to fill compliance shortfalls, if needed. Shortfalls may occur as production from generation currently under contract fluctuates, new projects experience potential construction or operational delays, or current year incentive reservations may not be installed until the subsequent reporting year as part of normal contract expectations. Changes to the bank generally have consisted of expected withdrawals to meet compliance and deposits from excess generation in any given year. RES bank accounting is applied so that withdrawals from the entire bank will be made first toward the year's compliance requirements, and subsequently the current year's eligible renewable generation will be used to meet any remaining compliance balance. Any remainder, after all compliance requirements are met, will be the current year's ending bank balance. Given that APS exceeded its RES requirements for both Renewable Generation and DE, the Company ended 2011 with 444,380 MWh of RES-eligible banked energy. A table detailing the banking reconciliation is provided in Appendix A.

D. Additional Reporting

The following compliance items were required in conjunction with approval of the 2011 RES Implementation Plan in Decision No. 72022

- Decision No. 72022 (December 10, 2010) ordered that APS disclose when, among other items, its affiliates "have any financial or other interest in a renewable energy project." Although not a direct interest in any renewable energy project, APS reports the following in an abundance of caution. From 2008 through a portion of 2011, former APS affiliate APS Energy Services (APSES) played a project management role in certain renewable projects involving Arizona State University. ASU selected APSES as a vendor and APS played no role in that selection. APSES is no longer an affiliate of APS.
- In addition to prior year Liquidated Damage payments reported in the 2010 RES Compliance Report, in 2011 SunEdison paid APS \$24,000 to extend the Commercial Operation Date (COD) by one month for the Prescott Generating Station. These funds were credited to the RES.

Performance Metering for Schools Receiving Up-Front Incentives

In Decision No. 71275, APS was required to install a performance meter at every school project that received an up-front incentive (UFI) pursuant to the Decision. Further, APS is required to monitor and report the actual metered production of these systems. Appendix B lists all schools which received UFIs in 2011 as a result of this Decision, the date the systems were on-line, and the total energy produced in 2011. All schools installed photovoltaic (PV) systems.

²⁰ Decision No. 70313 (April 28, 2008).

II. APS's Renewable Energy Standard Efforts

A. Renewable Generation

Non-distributed renewable energy resources (Renewable Generation) represent a subset of the total achievement requirement outlined in the RES rules. For calendar year 2011, the Renewable Generation contribution translated to 677,567 MWh of the Company's total RES requirement of 846,310 MWh. As a result of the increased energy requirement to be met under the 2009 Settlement Agreement, APS's Renewable Generation resources exceeded the total 2011 RES Renewable Energy target. Table 3 summarizes the renewable resource categories which comprise the Renewable Generation portion of the Company's total 2011 RES requirement.

Table 3:
2011 Renewable Generation Resources

	Actuals	
	MW (capacity)	MWh (energy)
Wind ¹	190.0	537,989
Biomass ²	24.5	139,688
Landfill Gas	2.9	17,871
Geothermal	10.0	72,143
Solar ³	65.1	44,605
	292.5	812,296
Less Green Choice Rate Sales ⁴		(134,729)
Total Renewable Generation Resources		677,567
<i>Total RES non-DE goal ⁵</i>		<i>634,732</i>
<i>% of Non-DE target</i>		<i>107%</i>

Notes to Table 3:

¹Perrin Ranch produced 13 MWh of test generation in December 2011, however the facility did not reach COD in 2011 and is not included as in-service capacity.

²2011 actual biomass production includes a 10MW contractual addition which expired on August 1, 2011. Additionally a portion of the production from this category is counted to the company's DE requirement.

³ Value reported includes RES multiplier for in-state solar installations prior to December 31, 2005.

⁴ Green Choice program sales cannot be applied towards overall RES compliance.

⁵ RES non-DE goal based on actual 2011 retail sales.

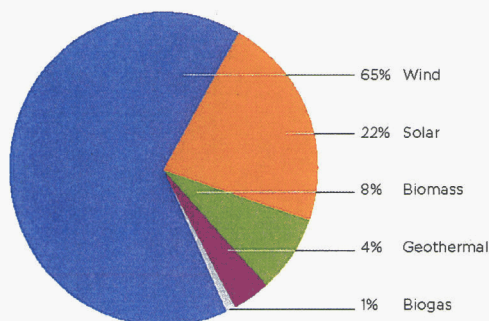
1. Renewable Generation Resources

The Company's portfolio of Renewable Generation energy encompasses a pool of resources that qualify as renewable facilities and whose energy is applied largely toward the overall non-distributed RES requirement. The APS Renewable Generation portfolio is shifting from primarily utility-scale wind resources to now include a large amount of solar generating resources, with 2011 being a key year for utility-scale solar resources reaching commercial operation. APS ended the year with 61.5 MW²¹ of installed utility-scale solar capacity and 32 MW in additional contracted Renewable Generation solar projects. With projects in development or currently under contract to meet Commission requirements, in coming years APS expects to see additional utility-scale solar, wind, and landfill gas projects reach commercial operation as the Company's mix of renewable portfolio technologies further matures. Figure A below represents a snapshot of the Company's technology mix by capacity as of the close of 2011. They also show how the Company's portfolio balance is expected to shift in the near-term as expected projects are placed into service. Additionally, Figure A and Table 4 show APS's full fleet of Renewable Generation projects currently installed, under contract, or in active planning as of the end of 2011:

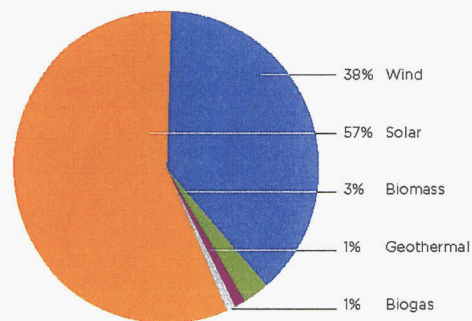
Figure A

2011 RENEWABLE GENERATION CAPACITY BY TECHNOLOGY

Installed Resources (MW)



Installed & Expected Resources (MW)



²¹ Includes 5.6 MWdc of installed solar PV capacity. Utility Renewable Generation operations and service are generally provided in alternating current (ac) capacity, whereas solar nameplate capacity for distributed energy is commonly reported in direct current (dc) watts.

Table 4:
RENEWABLE GENERATION RESOURCES

Resource	Technology	Ownership Model	Commercial Operation Date (COD)	Capacity (MW)	2011 Actual Production (MWh)
IN OPERATION					
AZ Sun: Paloma	Solar PV	AZ Sun	Sep 2011	17	13,577 ¹
AZ Sun: Cotton Center	Solar PV	AZ Sun	Oct 2011	17	13,447 ¹
AZ Sun: Hyder (Phase I)	Solar PV	AZ Sun	Nov 2011	11	3,111 ¹
Ajo	Solar PV	3rd Party PPA	Sep 2011	4.5	1,990 ¹
Prescott	Solar PV	3rd Party PPA	Nov 2011	10	3,348 ¹
Aragonne Mesa	Wind	3rd Party PPA	Dec 2006	90	237,790
High Lonesome	Wind	3rd Party PPA	Jul 2009	100	300,186
Salton Sea/CE Turbo	Geothermal	3rd Party PPA	Jan 2006	10	72,143
Snowflake White Mountain Power	Biomass	3rd Party PPA	Jan 2005	24.5 ²	160,846
Sexton (Glendale Landfill)	Biogas	3rd Party PPA	Dec 2009	2.9	17,871
Small Solar Projects	Solar Trough & PV	APS-owned	Varied	5.6 ³	6,088 ⁴
TOTAL RESOURCES				292.5	830,410 ^{5,6}
Resource	Technology	Ownership Model	Expected COD	Capacity (MW)	Expected Annual Production (MWh)
CONTRACTED OR IN PLANNING					
AZ Sun: Hyder (Phase II)	Solar PV	AZ Sun	Feb 2012	5	40,669 ⁷
Perrin Ranch	Wind	3rd Party PPA	Apr 2012	99	282,000
Surprise Landfill Gas	Biogas	3rd Party PPA	Jun 2012	3.2	22,500
Tonopah	Solar PV	3rd Party PPA	Dec 2012	15	35,061
Solana	CSP with storage	3rd Party PPA	Mid 2013	250	903,000
Tonopah II	Solar PV	3rd Party PPA	Dec 2013	15	39,513
Maricopa County	Solar PV	3rd Party PPA	Dec 2013	15	42,643
AZ Sun: Chino Valley	Solar PV	AZ Sun	Dec 2012	19	46,000
AZ Sun: Foothills Phase I ⁸	Solar PV	AZ Sun	Mar 2013	17	TBD
AZ Sun: Foothills Phase II ⁸	Solar PV	AZ Sun	Dec 2013	18	TBD
AZ Sun: Hyder II ⁸	Solar PV	AZ Sun	Dec 2013	14	TBD

Notes to Table 4:

¹Partial year production.

²From August 2010-August 2011, APS executed a one-year contract for an additional 10 MW.

³Rated as dc capacity; comprised of approximately 1 MW at the Saguaro Generating Station and other small scale PV facilities.

⁴Applicable multipliers added an additional 3,044 MWh above the actual production.

⁵Includes 13MWh of test generation produced at Perrin Ranch in December 2011, however the facility did not reach COD in 2011 and is not included as in-service capacity.

⁶Gross Renewable Generation for RES reporting as noted in Table 1 is 812,296 MWh.

⁷Represents the full Expected Annual Production of Hyder Phase I and Phase II combined.

⁸RFP solicitations have been issued and pre-contract development is ongoing.

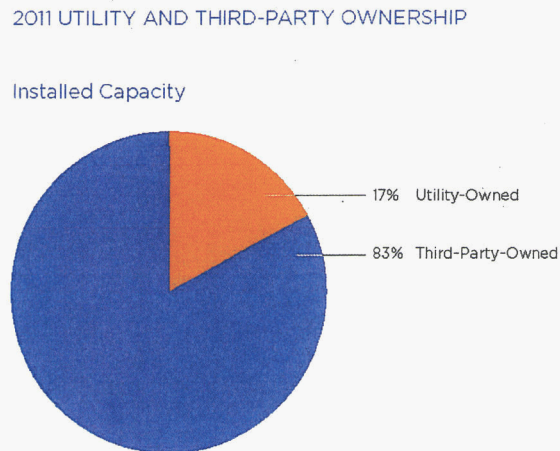
Generation in Operation

In 2011, the APS solar portfolio grew as the Company placed in service the first 45 MW of solar photovoltaic facilities under the AZ Sun Program.²² APS also commissioned 14.5 MW from two solar PV facilities in the third and fourth quarters of 2011. These facilities were commissioned using a Power Purchase Agreement (PPA) model, in which a third-party-developer develops, builds, and owns the facility while APS signs a long-term contract to receive its energy output. A strong majority of Renewable Generation, both installed capacity as well as installed plus expected capacity, are expected to be owned by third-party partners through 2013. Figure B below shows the breakdown of third-party and utility owned models covering APS

²² The AZ Sun Program was approved per Decision No. 71502.

Renewable Generation resources. Although Figure B shows current installed capacity only, a comparison of current installed capacity plus contracted and in-planning resources results in a nearly identical ownership split over time.

Figure B



AZ Sun Program

The AZ Sun program is a key element of APS's strategy to serve its customers with electricity generated from clean, renewable generation resources. Through this program, APS is partnering with third-party solar developers, contractors and equipment suppliers to develop 200 MW of utility-scale solar power plants throughout Arizona by 2015. Together, the plants will harness the sun's energy to generate enough electricity to power 50,000 homes for the next three decades.

Key Events:

The first three facilities under the AZ Sun Program went into commercial operation in 2011, with the Paloma Solar Plant moving from ground-breaking to electricity production in only four months. For the Hyder Solar Plant, the first 11 MW reached commercial operation in November 2011, and an additional 5 MW were completed in February 2012. In late 2011, APS initiated a solicitation for its next AZ Sun project to be developed in Yuma with a targeted in-service of 2013. In March 2012, APS also commenced a Request for Proposal (RFP) seeking bids for a 14 MW facility to be developed near Hyder, AZ.

The first two third-party-owned solar Renewable Generation facilities resulting from APS's Small Generator RFP reached commercial operation within the last several months of the year. The Ajo Generating Station began commercial operation on September 26, 2011, and the Prescott Solar Plant began commercial operation on November 29, 2011.



Photograph courtesy of Abengoa Solar

Plant performance milestones include the Salton Sea/CE Turbo geothermal facility, which successfully achieved a three-year production requirement of 120,838 MWh, and the Sexton landfill biogas facility which achieved a contracted two-year production requirement of 32,450 MWh by producing over 17,000 MWh each of the past two years.

High Lonesome Wind Farm's 300,186 MWh output exceeded the annual 290,603 MWh forecast by over three percent. High Lonesome also maintained a reliable plant availability of 92 percent for the year.

The Perrin Ranch Wind Farm, located in Williams, AZ, was connected to the grid in December 2011 and has an expected commercial operation date in the second quarter of 2012.

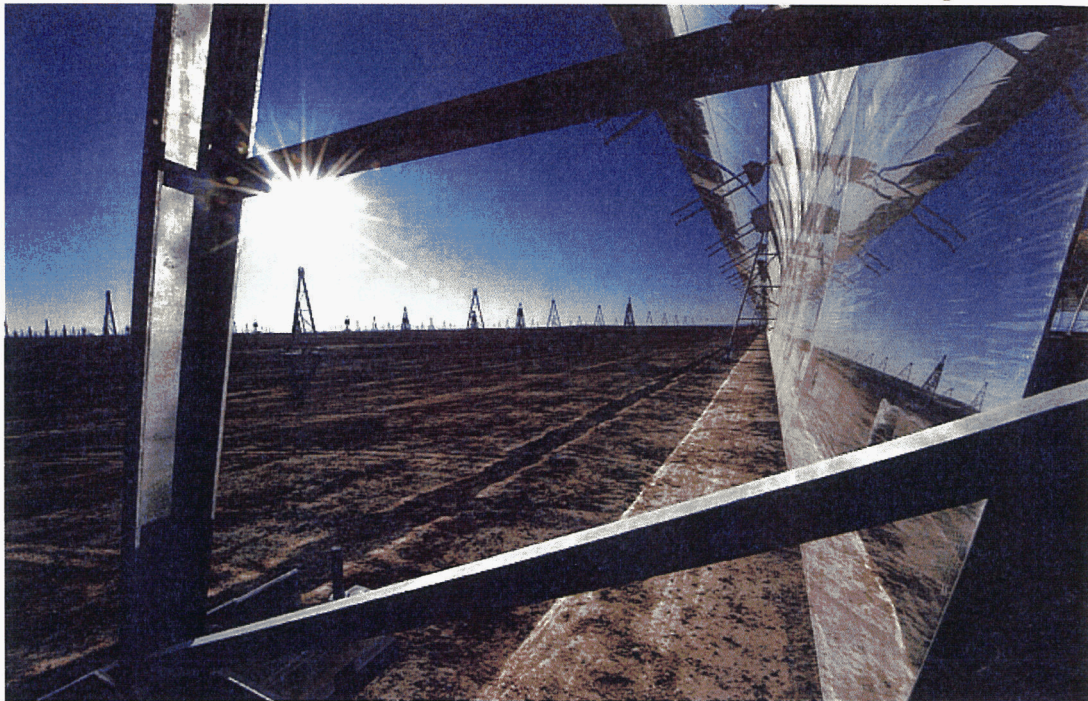
Solana – APS's Largest Renewable Generating Station

Located in Gila Bend, AZ, the Solana Generating Station is a 250 MW Concentrating Solar Power (CSP) plant with six hour thermal storage capability. The facility is currently under construction and will produce enough energy to serve 70,000 APS customers when operating at full capacity. Thermal energy storage capability will allow the solar trough to supply electricity when energy is most needed by APS customers. The plant began construction in December 2010 and is expected to start providing renewable energy as of July 2013.

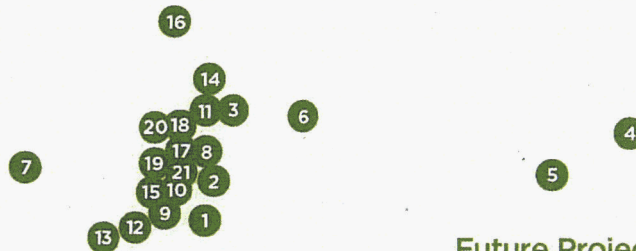
By the end of 2011, the total project was 39 percent complete. There were more than 1,100 people working on the construction of Solana, and the facility's operation will require 85 highly-trained staff when complete.

Significant progress was made during the year on the construction of the facility's towers and mirror arrays. By the end of 2011, most environmental permits were in place, all permits for 230kV transmission line were obtained, and collector system permits were received in order for installation to start as planned. A 230KV transmission line will connect Solana to Panda Substation. Construction has begun on the transmission line and is expected to be complete by May 2012.

Photograph of ongoing construction at the Solana Generating Station:



Photograph courtesy of Abengoa Solar



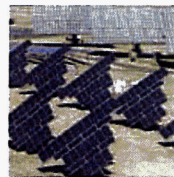
Existing Projects



1 SAGUARO
Concentrating Solar
(1 MW)



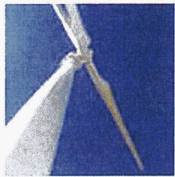
**2 STAR CENTER
(AND OTHER SMALL
SOLAR ACROSS AZ)**
Photovoltaic Solar
(1 MW)



3 PRESCOTT (APS)
Photovoltaic Solar
(3 MW)



**4 ARAGONNE
MESA**
Wind
(90 MW)



**5 HIGH
LONESOME**
Wind
(100 MW)



6 SNOWFLAKE*
Biomass
(24 MW)



7 SALTON SEA
Geothermal
(10 MW)



**8 GLENDALE
LANDFILL**
Biogas
(3 MW)



9 PALOMA
Photovoltaic Solar
(17 MW)



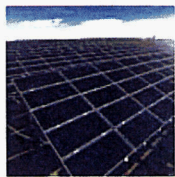
**10 COTTON
CENTER**
Photovoltaic Solar
(17 MW)



11 PRESCOTT
Photovoltaic Solar
(10 MW)



12 AJO
Photovoltaic Solar
(5 MW)



13 HYDER**
Photovoltaic Solar
(16 MW)



14 CHINO VALLEY
Photovoltaic Solar
(19 MW)



15 SOLANA
Concentrating Solar
(250 MW)



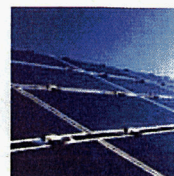
16 PERRIN RANCH
Wind
(99 MW)



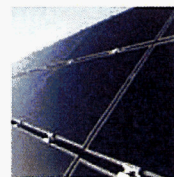
**17 PLANNED AZ
SUN PROJECTS**
Photovoltaic Solar
(49 MW)



**18 SURPRISE
LANDFILL**
Biogas
(3 MW)



19 TONOPAH
Photovoltaic Solar
(15 MW)



20 TONOPAH II
Photovoltaic Solar
(15 MW)



**21 MARICOPA
COUNTY**
Photovoltaic Solar
(15 MW)

* From August 2010 - August 2011, APS secured a one-year contract for an additional 10 MW for a total 24.5 MW.

** Hyder (Phase 1) for 11 MW was in-service November 2011. Hyder (Phase 2) for 5 MW was in-service February 2012.

2. Contracts Terminated

No contracts were terminated in 2011, but a one year contract for 10 MW of additional capacity at Snowflake concluded in August, 2011.

3. Renewable Generation Costs

In 2011, APS's Renewable Generation energy was derived from PPAs and APS-owned solar facilities. Table 5 below summarizes the invoice costs associated with those purchased power renewable energy contracts.²³

Table 5:
2011 Renewable Generation Costs per MWh (renewable energy premium costs)

	MW (capacity)	MWh (energy)	RES Cost ¹	RES Cost per MWh ¹
Wind ²	190.0	537,989		
Biomass	24.5	139,688		
Landfill Gas	2.9	17,871		
Geothermal	10.0	72,143		
Solar (PPA)	14.5	5,338		
Solar (APS-owned) ³	50.6	39,267		
Renewable Generation Total	292.5	812,296	\$9,165,568	\$ 11.28

Notes to Table 5:

¹ Redacted due to the competitively confidential nature of the contract information and the relation to avoided cost.

² Perrin Ranch produced 13 MWh of test generation in December 2011, however the facility did not reach COD in 2011 and is not included as in-service capacity.

³ Includes RES multiplier for in-state solar installations prior to December 31, 2005.

²³ Invoice costs do not include associated system integration costs for these resources.

B. Distributed Energy

1. Distributed Energy Installations, Capacity and Energy

APS customer participation in DE projects allowed the Company to achieve a major program milestone for the first time in its DE program history: full compliance

Compliance requirements were met for DE in both the residential and non-residential segments

requirements were met and surpassed for both the residential and non-residential segments. The residential DE program reached 111 percent of its compliance requirement for the year, while the non-residential DE program reached 159 percent of its annual compliance requirement. As a whole, APS had 161.9 MW of

DE installed capacity by year end, which accounted for 286,519 MWh of distributed generation in 2011. Due to significant capacity installations for projects reserved in 2010 but brought online in 2011, APS had a 103 MW increase in installed capacity during 2011. This trend is expected to continue with a large volume of 2012 capacity installations resulting from prior year project reservations. Actual installations completed during the year totaled 5,259 residential systems and 237 non-residential systems. Detailed information on the capacity and energy production by technology and incentive category is provided in Table 6 alongside APS's overall RES DE requirements for 2011.

Table 6:
2011 Distributed Energy Installed Resources

	MW² (capacity)	MWh³ (energy)	DE Requirement	Percent of DE Requirement
<u>Residential</u>				
<u>Up Front Incentives</u>				
Solar Electric ¹	56.2	95,900		
Wind	0.1	162		
Biogas	-	-		
Solar Space Heating	N/A	362		
Solar Water Heating	N/A	17,964		
Solar HVAC	N/A	9		
Geothermal Process/Space Heating	N/A	3,529		
Total Residential	56.3	117,926	105,789	111%
<u>Non-Residential</u>				
<u>Up Front Incentives</u>				
Solar Electric ¹	13.3	20,390		
Wind	0.1	281		
Biogas	-	-		
Geothermal Process Heating/Cooling	N/A	143		
Solar Space Heating	N/A	1,856		
Solar Water Heating	N/A	3,023		
Solar HVAC	N/A	380		
Solar Pool Heating	N/A	1,596		
<u>Production Based Incentives</u>				
Solar Electric ⁴	92.2	117,827		
Wind	-	-		
Biogas	-	-		
Solar Space Heating	N/A	-		
Solar Water Heating	N/A	1,543		
Solar HVAC	N/A	396		
<u>Wholesale DE</u>				
Biomass	N/A	21,158		
Total Non-Residential	105.6	168,593	105,789	159%
Total Distributed Energy Resources	161.9	286,519	211,577	135%

Notes to Table 6:

¹ Includes RES multiplier for in-state solar installations prior to December 31, 2005.

² MWdc.

³ Annualized energy production.

⁴ Includes capacity and energy from Bagdad mine site.

Calendar year 2011 was another record-setting year in terms of total applications and installations across the total DE program. Table 7 below shows 6,662 total applications were received in 2011. Through the full life of APS's DE incentive programs ending with 2011, APS has received and processed a total of 23,656 applications requests to-date and 16,612 systems have been installed. Even with lower incentives in 2011, grid-tied PV applications in 2011 accounted for 4,548 total applications across the residential and non-residential segments. The grid-tied PV category once again comprised a strong majority of total incentive applications received in 2011 (68 percent), with solar water heating applications registering 27 percent of total applications, and all other technologies combining for the remaining five percent.

Table 7:
2011 DE Application Statistics

Program	PV (Grid Tied)	SWH	Other ¹	2011 Total ²	Program Lifetime Total
Residential	4,212	1,771	322	6,305	22,385
Non-Residential UFI	137	10	9	156	681
Non-Residential PBI	199	1	1	201	590
Total	4,548	1,782	332	6,662	23,656

Notes to Table 7:

¹Includes 197 solar space heating, 79 off-grid PV, 35 geothermal, and 11 wind applications.

²Applications received in calendar year 2011.

2. Internal and External Audits

APS retained Navigant Consulting, Inc. to perform an independent, external audit of the full DE program. Navigant's audit included data from January 1, 2010 through September 30, 2011. Navigant researched APS's consistency across project selection guidelines, granting deadline extensions, completing reported payments made, and transferring cancelled project funds back into accounts for available incentives.

In each case, Navigant reported that APS has been acting appropriately and consistently per APS's Distributed Energy Administration Plan (DEAP) and rules specified to program applicants on the APS website. Across both residential and non-residential program segments, Navigant verified that APS project selection, program criteria, and administrative process were consistent.

Additionally, APS conducted its own internal audit to focus on the Company's custom-developed residential data tracking software package, Renewable Portfolio Management (RPM), and its associated process controls. Protocols for data input, processing, report generation, and information security were all evaluated. Sample transactions were traced from application origination through to final payment. The internal audit rated overall internal processes and controls positively, concluding that internal controls for data input and tracking, report generation, and information security were functioning as intended.

3. Distributed Energy Costs

For compliance purposes, APS tracks total incentive dollars spent per megawatt-hour of energy production installed, by technology. Table 8 displays this information for the DE program in addition to cumulative PBI lifetime commitments for each technology and total incentives paid throughout the year. Residential incentive payments in 2011 totaled \$52.9 million and non-residential payments totaled \$11.6 million.

Table 8:
2011 Distributed Energy Incentive Costs

	Up-Front Incentives (\$/MWh)¹		Total incentives paid in 2011(\$)
Residential:			
Solar Electric ²	\$ 96.09		\$ 48,280,457
Wind	81.36		40,904
Geothermal Space Heating	72.55		1,621,925
Solar Space Heating	84.41		200,313
Solar Water Heating	49.94		2,768,681
Solar HVAC	-		-
<i>Subtotal: Residential</i>	<i>\$ 90.37</i>		<i>\$ 52,912,279</i>
	Up-Front Incentives (\$/MWh)¹	Production Based Incentives (\$/MWh)³	Total incentives paid in 2011(\$)
Non-Residential:			
Solar Electric	\$ 117.19	\$ 130.38	\$ 11,218,304
Wind	36.21	-	48,132
Biogas - CHP Electric	-	-	-
Biogas - CHP Thermal	-	-	-
Geothermal Space Heating	71.82	-	43,344
Solar Space Heating	43.79	57.00	116,810
Solar Pool Heating	9.54	-	48,623
Solar Daylighting	11.09	-	24,127
Solar Water Heating	43.10	58.00	118,171
Solar HVAC	-	-	-
<i>Subtotal: Non-Residential</i>	<i>\$ 80.66</i>		<i>\$ 11,617,511</i>
Total DE Incentive Costs⁴			\$ 64,529,790

Notes to Table 8:

¹Based on expected annual system production.

²Average incentive paid in 2011 was \$1.45/Watt for residential solar electric (PV).

³Based on contractual annual system production.

⁴Includes payments made in 2011 from prior fiscal year commitments.

4. Up-Front Incentive Program

The 2011 total budget for both residential and non-residential Up-Front Incentives (UFI) was approximately \$82.2 million and included \$43.7 million in approved incentive funds for the year, plus \$4.9 million in net budget transfers (see Table 9 footnotes) and \$33.6 million in committed funds rolled over from 2010. Table 9 provides a detailed look of incentives paid, incentives reserved, and the total UFI budget commitment for the year.

Table 9:
2011 Distributed Energy: Up Front Incentive (UFI) Budget Results

	Residential Incentives \$	Non-Residential Incentives (\$)	Total UFI Commitment (\$)
Installed	\$ 52,912,279	\$ 1,762,419	\$ 54,674,699
Reserved	23,108,219	3,335,701	26,443,919
Total	\$ 76,020,498	\$ 5,098,120	\$ 81,118,618
Starting UFI Budget	\$ 41,700,000	\$ 2,000,000	\$ 43,700,000
Net Budget Transfers ¹	<u>4,885,000</u>	(a), (b), (c), (d) <u>-</u>	<u>4,885,000</u>
<i>Subtotal: Updated UFI Budget</i>	<i>\$ 46,585,000</i>	<i>\$ 2,000,000</i>	<i>\$ 48,585,000</i>
Prior Year Committed Carryover ²			\$ 33,625,486
Total Available UFI Budget			\$ 82,210,486

Notes to Table 9:

¹ **Budget Transfer Activities:**

(a) A budget transfer of \$188,000 was made from the proposed FIT program to residential UFI program in July 2011 as per ACC Decision No 72174.

(b) A budget transfer of \$2,500,000 was made for the Rapid Reservation carve out into residential UFI in July 2011 as per ACC Decision No 72174.

(c) A budget transfer of \$997,000 was made from the RES Marketing budget into residential UFI in July 2011 as per ACC Decision No 72174.

(d) A budget transfer of \$1,200,000 was made from the Energy Innovation and Low Income programs to the residential UFI program Nov 2011.

² Includes \$7.4M of 2011 UFI Budget funds reserved in the 2010 calendar year.

5. Production-Based Incentive Program

By the end of 2011, the PBI installed capacity totaled slightly more than one-half of all DE capacity. In 2011, APS paid approximately \$9.7 million in PBIs in its standard program for both new systems installed and existing facilities. Because most new systems were installed mid-year, customers received partial year payments for production. Based on the equivalent of a full year of production, the systems installed by year-end 2011 would result in a full year expected PBI payment of \$26.5 million. In 2009, APS received authorization to recover up to \$220 million in lifetime PBI commitments.²⁴ In a subsequent Decision,²⁵ the Company was granted an additional \$100 million in lifetime PBI commitments per year to reach a lifetime PBI incentive availability of \$420 million at the end of 2011. In addition to the lifetime commitments under the standard PBI program, APS was authorized to recover up to \$225 million for its DE RFP solicitations and \$25 million for its Innovative Renewable Energy Projects RFP.²⁶ The total lifetime authorization for PBI projects through the end of 2011 was \$670 million.

APS awards its PBI incentive reservations based upon a competitive bid solicitation process. During 2011, six bi-monthly bid solicitations were held and winning bid

²⁴ Decision No. 71254.

²⁵ Decision No. 71459.

²⁶ Decision No. 72022.

scores were publicly posted online after the close of each solicitation period.²⁷ As a result of the rise in demand for PBI incentives, competitive market forces placed continued downward pressure on winning scores. The lower scores resulted in a reduction in applicants' requested PBI incentive payments per MWh of system production. This competitively-driven incentive decline contributes both to a more cost-effective administration of RES incentive funds as well as an overall ability for APS to fund a higher amount of installed capacity within the same budget.

Table 10:
2011 Distributed Energy: Production Based Incentive (PBI) Budget Results

	PBI Reservations	Paid Incentive	Annualized Commitment \$	Lifetime Commitment (\$)
Non-Residential PBI Program				
<i>Pre-2011 Projects:</i>				
Completed	148	\$ 9,621,316	\$ 15,829,678	\$ 232,811,480
Extended Reservations	37	-	3,185,256	44,645,393
Subtotal: pre-2010 Projects	185	\$ 9,621,316	\$ 19,014,933	\$ 277,456,873
<i>2011 Projects Only:</i>				
Completed	11	\$ 63,138	\$ 555,799	\$ 9,055,232
Reserved	139	-	6,975,374	97,551,257
Subtotal: 2011 Projects	150	\$ 63,138	\$ 7,531,173	\$ 106,606,489
Non-Residential PBI Program Totals:	335	\$ 9,684,455	\$ 26,546,106	\$ 384,063,362
Distributed Energy RFP				
Aggregator	1	\$ -	\$ 6,120,603	\$ 122,412,065
Bagdad	1	\$ 19,717	\$ 2,576,580	\$ 66,991,084
DV Schools	1	\$ -	\$ 601,698	\$ 12,033,981
Distributed Energy RFP Totals:	3	\$ 19,717	\$ 9,298,881	\$ 201,437,130
2011 Schools and Government Program				
Completed	0	\$ -	\$ -	\$ -
Reserved	25	-	1,601,389	20,302,351
Schools and Government Program Totals:	25	\$ -	\$ 1,601,389	\$ 20,302,351
Total Lifetime PBI Budget Spent/Committed		\$ 9,704,172	\$ 37,446,377	\$ 605,802,843
2009 Lifetime PBI Budget Authorization ¹				\$ 220,000,000
DE RFP Lifetime PBI Budget Authorization ²				\$ 225,000,000
Innovative Technologies Lifetime PBI Budget Authorization ³				\$ 25,000,000
2010 Additional Lifetime PBI Budget Authorization ⁴				\$ 100,000,000
2011 Additional Lifetime PBI Budget Authorization ^{4,5}				\$ 100,000,000
Total Lifetime PBI Budget Authorization				\$ 670,000,000
Total Lifetime PBI Budget Spent/Committed				\$ 605,802,843
Remaining Lifetime PBI Budget Authorization⁶				\$ 64,197,157

Notes to Table 10:

¹ Pursuant to Decision No. 71254, the total lifetime PBI budget through and including 2009 is \$220 million of total contract commitments.

² Pursuant to Decision No. 71459, APS was authorized a total lifetime PBI Budget Authorization of \$250 million for its DE RFP.

³ Pursuant to Decision No. 72022, APS was authorized to commit \$25 million of its DE RFP authorization to the Innovative Projects Program. APS issued an RFI for this program in early 2012.

⁴ Pursuant to Decision No. 71459, APS was authorized an additional \$100 million per year lifetime commitment authorization.

⁵ Pursuant to Decision Nos. 72022 and 72174, in 2011, APS committed \$27 million of its Lifetime PBI Budget Authorization towards the Schools and Government Program and the remaining \$73 million towards its non-residential PBI program.

⁶ Of the total remaining \$64.2M of lifetime PBI authorizations \$8.9 million is available under the non-residential PBI program and \$6.7 million is available under the Schools and Government Program both of which will be allocated to the 2012 program. Further, \$23.6 million is available under the DE RFP and \$25.0 million is available under the Innovative Technologies Program.

6. Residential Program

Energy from residential installations exceeded the annual DE compliance requirement for the second straight year. As seen in Table 7, APS received a total of 6,305

²⁷ Generic winning bid scores were posted for informational purposes, but names and other details of winning bids were kept confidential.

residential incentive applications in 2011. Grid-tied PV applications were up three percent for the year, ending 2011 with 4,212 applications. The transparency of APS administrative processes under the Company's new incentive tracking and management software played a critical role in APS managing the growing DE market while operating within its budget constraints.

DE market growth within the APS service territory, as evidenced by the year's high application rates, indicate the continued maturation of the market. The RES incentive program was designed to decrease incentive levels as the market matures and competition increases. As a result, participation volume in 2011 led to an incentive decline from \$1.75/watt at the beginning of the 2011 budget year to \$1.00/watt in June 2011.²⁸ The average incentive paid in 2011 was \$1.45/watt, down from \$2.25/watt in 2010. While APS offered a rapid incentive reservation option to shorten administrative processing for applicants requesting the \$1.00/watt incentives, use of this option was low until other incentive funds at higher rates were exhausted.

Figure C

PV Grid-Tied Incentive History		
Start Date	End Date	Incentive Level
Prior to April 2010	4/2/2010	\$3.00/watt
4/3/2010	4/12/2010	\$2.15/watt
4/13/2010	9/20/2010	\$1.95/watt
9/21/2010	1/16/2011	\$1.75/watt
1/17/2011	3/25/2011	\$1.60/watt
3/26/2011	6/10/2011	\$1.45/watt
6/10/2011	11/15/2011	\$1.00/watt
11/16/2011	1/19/2012	\$0.75/watt ¹

¹ \$0.75/watt funded against 2012 budget.

APS's Energy Star and Solar Homes Program, which began in 2009, grew from 12 participating builders in the program in 2010 to 15 builders in 2011, now representing a total of 45 communities.

Residential – Key Events

- *Leased Systems on the Rise*

The overall number of reservation applications for leased systems soared from 30 percent in 2010 to over 75 percent in 2011. APS expects this trend to continue in 2012 as incentive levels continue to decline. As lower incentive levels in turn impact the value proposition various business models offer customers, APS has updated its

²⁸ The 2011 incentive levels indicated are in reference to budget year 2011, therefore they include some applications received in calendar year 2010 which were funded against the 2011 budget.

data tracking to ensure a proper level of detail is provided under leased as well as customer-owned systems.

- *Stakeholder Collaboration and Communication Outreach*

Ten different stakeholder meetings took place during the year as part of APS's commitment to transparency and collaboration within its DE program. Stakeholder meetings updated both installers and customers on program results and process changes, while soliciting feedback on APS's developing proposal for its 2012-2016 Renewable Energy Standard Implementation Plan filing. APS collaborated with stakeholders on how to best implement funding quarters for its residential DE program, and also improved its administration related to leased systems given stakeholder feedback. A stakeholder meeting was held in June to specifically address how leased system applications would be administered moving forward. Additional informational workshops were held for the Commission and its staff in August and September.

The following series of stakeholder meetings were held in 2011:

- Feb. 18 2011 RES Program Overview Flagstaff Stakeholder meeting
- Feb. 21 2011 RES Program Overview
- Apr. 25 Stakeholder Updates on 2012 RES IP Planning, 2011 Status, 2010 Performance
- Jun. 7 Stakeholder Leased System Training
- Jun. 16 Stakeholder Workshop
- Jul. 21 RES IP Follow-up with Stakeholders
- Aug. 17 Stakeholder Workshop
- Sep. 9 Stakeholder Workshop
- Sep. 15 Stakeholder Workshop
- Sep. 22 Stakeholder Workshop

- *Program Improvements*

APS implemented a policy effective November 1, 2011 that required all residential reservation applications be accompanied with a signed contract between the customer and the installer. This policy enhancement is intended to ensure that incentive fund commitments are given to applications that are likely to result in fully-constructed projects, thus decreasing reservation cancellations. Program and process improvements in 2011 included improvements to reservation extension and cancellation processes as well as leased system contract verification enhancements.

- *Decrease in number of developers and installers*

In 2011, APS witnessed a decrease in the number of installers that participated in the DE programs. Overall, there were a total of 92 SWH installers and 161 PV installers in 2011.

- *Average system size remains steady*

After growing from 6 kWdc in 2009 up to 7.1 kWdc in 2010, the average residential PV system size in 2011 held roughly steady from 2010 at 6.9 kWdc.

7. Non-Residential Program

APS's non-residential program exceeded its compliance requirement in 2011 for the first time since the inception of the Arizona RES standards. With an installed capacity of 92.5 MW by the end of the year, non-residential renewable energy was 168,593 MWh in 2011, achieving 159 percent of the overall non-residential RES requirement. More non-residential systems were commissioned during 2011 than in any previous year. Non-residential incentives were made available through a competitive funding process to small, medium, and large project participants throughout the year.

Highlights of large commercial projects which came online in 2011 include:

- *Arizona Western College (AWC)* – 5 MW from five separate 1 MW installations with single and dual-axis tracking systems using five different technologies and manufacturers. The project was awarded a "Photovoltaic Projects of Distinction Award" by the Solar Electric Power Association (SEPA). AWC is developing curriculum and a study program around the installations.
- *Arizona State University* – installed multiple MW during the year and will have almost 15 MW of solar capacity installed with additional projects in the pipeline during 2012.
- *Paradise Valley Unified School District* – installed and reserved funding for over 7 MW of PV installations at multiple campuses across their district.
- *Buckeye Unified School District* – completed over 4 MW of PV installations at multiple campuses across their district and was able to reserve funding for additional installations which will be completed in 2012.
- *Severn Trent (Gilbert's Neely Wastewater Reclamation Plant facility)* – installed a 2.26 MW PV ground mounted system over 5 of their 11 recharge basins and is estimated to off-set about 40% of the plant's power needs.
- *Macy's Distribution Center* – installed a total of 3.5 MW in rooftop solar PV to become a Valley Forward "Environmental Excellence Award" nominee.

Non-Residential – Key Events

- *Bidding Competition Helps Drive Down Incentives Paid per kWh Produced*

Figure D shows a trend of bidding score declines leading to the same RES incentive funding level now subsidizing a larger installed capacity base per dollar spent. Increased competition and program maturity resulted in the sharp decline of winning application ranking scores for both non-residential PBIs and UFIs as seen in Figure D. A lower score generally equates to a lower requested RES incentive payment per kWh of renewable energy production to be installed. Scores roughly translate into cents per kWh equivalent, with a score of 681 approximately equal to a request of \$0.068 per kWh. The trend of declining scores occurred at the same time that overall

applications were on the rise, indicating that the rooftop PV market continued to thrive despite increasingly lower incentives paid.

Figure D

2011 Non-Residential Winning Bid Cutoff Scores

Bidding Period	Incentive Type		
	UFI	PBI (Medium)	PBI (Large)
Jan/Feb	465	1260	1003
Mar/Apr	401	1090	
May/Jun	375	1094	
Jul/Aug	349	824	890
Sep/Oct	319	681	
Nov/Dec	268	494	

- *RES Compliance from Reserved Projects Coming Online*

APS's achievement of the full RES compliance requirement for non-residential systems came largely as a result of the completed installation of a high number of projects which were reserved in 2010. Due to a sizable reservation commitment level in 2011, APS expects a similar outcome in 2012 with installations from prior year projects resulting in a large gain in installed capacity and a continuation of APS exceeding compliance.

- *Program Administration Transparency/Collaboration*

Multiple improvements during the course of the year enabled non-residential programs to operate more efficiently and move customer incentive requests towards fulfillment. In response to customer feedback, the Credit Purchase Agreement (CPA) due date was changed from 30 days from incentive notification to 45 days after notification. Programs were managed so that participants would adhere more tightly to required program milestones. As a result there was a marked improvement in milestone compliance from customers and an overall decrease in project cancellations. APS also required applicants to submit documentation on system specifications using the *PVWatts* software in order to validate estimates of systems' kWh production rates per installed kW of capacity.

The overall outcome of these administrative changes amounted to an improvement in transparency for both the applicant and APS: applicants provided clearer project documentation and milestone achievement, and APS reinforced project selection and incentive processing protocols.

Additionally, the APS customer relationship management team engaged in regular outreach to industry members and program participants in order to communicate program guidelines and dates, set performance expectations, and educate customers on renewable energy.

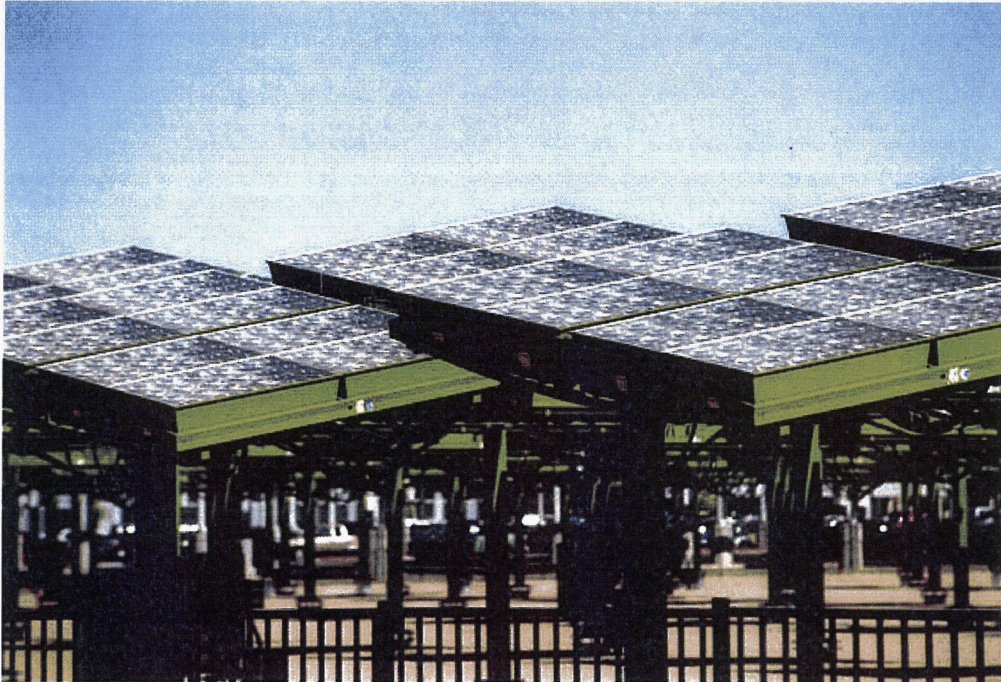


Photo provided by Arizona Western College

8. 2011 Schools and Government Program

The 2011 Schools and Government Program was developed in compliance with the 2009 Settlement Agreement in order to provide opportunities for schools and government facilities, particularly in rural or economically challenged areas of the state, with opportunities to deploy solar with no up-front costs.²⁹

Decision No. 72022 granted APS authority to own up to 25 percent of the total program capacity and the remaining 75 percent was available under APS's third-party incentive program.

For the APS owned portion, the eligibility criteria and program parameters that were ordered in Decision No. 72174 (February 11, 2011) were:

- Must be an economically challenged school with a per pupil available bonding capacity of \$8,000 or less and 60 percent or more of students participating in free or reduced lunch programs;
- Location must be classified as rural by the Census Bureau; and
- Applicant must receive a proposal from a third-party solar installer not affiliated with APS.

²⁹ In compliance with Decision No. 71275, APS filed for approval of this program on April 29, 2010 and received Commission approval on December 10, 2010 as part of Decision No. 72022 and on February 11, 2011 as part of Decision No. 72174.

APS's program process was fully developed and began implementation in 2011. The process included recruitment, internal and external review of designs, an RFP process, construction, interconnection, and operations and maintenance. Through 2011, APS had 51 schools in 15 separate school districts apply under the APS-owned portion of the program. As of the end of 2011, the capacity identified under eligible school systems totaled 7.2 MW. By March 2012, the first two school PV projects totaling 504 kW resources had been placed into service.

In 2011 APS's Schools and Government Program for third-party incentives received a total of 80 applications for incentives. After applying an applicant ranking matrix, which was built in collaboration with the Schools Facility Board, APS funded 21 schools and allocated the full 2011 budget of \$17.5 million.³⁰

During 2011, six government facilities received funding commitments for 1.2 MW of photovoltaic installations, totaling just under \$4 million in funding commitments.



Cottonwood Elementary – Carport System

9. Distributed Energy Request for Proposal

Customer Aggregation Model

APS's 2010 RES Implementation Plan included a Customer Aggregation Model under which APS would contract with a third-party developer to phase-in projects over several years and have the ability to determine the optimal mix of customer installations and technologies needed to meet their fixed REC price to APS. In 2010, SunPower was awarded a DE RFP contract to deliver 75,000 MWh by 2014. As part of this agreement, 25,000 MWh worth of CPAs will be executed each year with a

³⁰ Due to the variable size of systems requesting incentives and APS's continued application acceptance, a total of \$18.2M in funding commitments were made instead of the \$17.5M budgeted for 2011. The additional \$700k will be applied to available funds in the 2012 budget.

contract requirement of 75,000MWh at full deployment. By the end of 2011, SunPower had met its first year target by executing CPAs for 34,000 MWh.

Bagdad Project

The Bagdad project is a 15 MW PV system located at Freeport-McMoran's ("Freeport") mine in Bagdad, Arizona developed under a renewable energy credit and energy contract model. Construction on the facility began in January 2011 and the solar power plant was placed into service on December 30, 2011. During November and December, Bagdad generated 2,036 MWh of test generation prior to reaching COD.

Deer Valley School District

In 2010, APS signed a contract with SOLON Corporation ("SOLON") and Deer Valley School District ("DVSD") as result of the DE RFP. SOLON and DVSD entered into a partnership under the agreement to allow SOLON to install up to 4.5 MW of photovoltaic panels on five separate schools by the end of 2012. By the end of 2011, SOLON had installed over 2.1 MW of PV systems at various schools within the DVSD. The installed systems are expected to produce over 3,318 MWh annually.

10. Community Power Project – Flagstaff Pilot

Residential and Commercial Program

The Community Power Project - Flagstaff Pilot ("Community Power Project") was approved by the Commission on April 1, 2010. The Community Power Project is a concentrated effort by APS to gain knowledge regarding the real-time effects of and operational needs required by an electric feeder containing a high deployment of distributed PV generation systems. More information on the research is provided on page 45, under the "High Penetration Photovoltaic Deployment Study" section. Through the Community Power Project, APS installed a total of 1,338 kWac of distributed renewable energy systems and two Solar Water Heater (SWH) systems. This total included 438 kW of APS PV installations on 125 residential rooftops and as of the fourth quarter of 2011 all installations are complete. In 2011, 345 residents applied to participate in the program, representing over fifteen and one-half percent of the eligible local residential market. Not all applicants met program eligibility criteria needed for project participation, such as having at least ten years of roof life remaining and having limited roof shading to ensure system production. The commercial component of the project was completed through the inclusion of a 325 kWac ground-mount and a 75 kW rooftop system at the Cromer School. The rooftop system is complete and the ground-mounted system at the Cromer School is expected to be commissioned by April 2012.

As described in previous RES Implementation Plans, this program will initially be funded with RES rollover funds from previous budget years. Pursuant to Decision No. 71646, the revenue requirements associated with APS's capital expenditures for installations deployed through the program have been funded through the RES

adjustor and the Company has requested in its current rate case that these costs be incorporated into the Company's rate base. In 2011, the total program cost of the Community Power Project was \$6.72 million, of which \$428,104 was recovered through the RES adjustor.³¹

Table 11:
2011 Community Power Project - Flagstaff Pilot Budget

Installations (Non-RES)	\$	6,343,266
Information Technology Capital Cost (RES)	\$	158,734
Operations and Maintenance (RES)	\$	218,139
<hr/>		
Total Program Cost for 2011	\$	6,720,139
<hr/>		
2011 RES Revenue Applied to Program	\$	428,104

Doney Park Renewable Energy Site

The Doney Park Renewable Energy Site (Doney Park) is the future site of a 69kV substation and is located on ten acres owned by APS. The site will study the system impacts of integrating 500 kWac of modern battery storage with a photovoltaic system. Construction was completed at the end of 2011 and the site was commissioned in the first quarter in 2012.

11. Distributed Energy Leadership Program

In 2010, APS received a grant through the Arizona Department of Commerce's American Recovery and Reinvestment Act (ARRA) Distributed Energy Leadership Program for \$3.4 million.

APS is administering two programs using this ARRA grant, the Renewable Energy Leadership Projects (RELP) and Low Income Residential Partnership Projects (LIRPP). The RELPs educate the public about renewable energy and the LIRPPs serve low income residential customers who are not able to participate in the renewable energy program.

In 2011, two RELPs and three LIRPPs were completed. In addition, two RELPs and six LIRPPs were in progress by year-end. The majority of the LIRPPs are one to four kW PV systems, installed on low income multi-family residences. The properties are owned by non-profits or public housing authorities. At the end of 2011, there was one SWH system being installed at a senior apartment complex in Phoenix.

³¹ In 2011, APS also recovered \$638,120 in Revenue Requirements attributable to the Community Power Project, as shown in Table 2.

Completed RELPs:

- 10kW PV pavilion at Tempe Beach Park
- 24kW roof and ground mounted PV system at the Yuma Civic Center

Completed LIRPPs:

- 4 PV systems – Maggie’s Place (Magdalena House)
- 14 PV systems – Maricopa County Housing Authority (Varney Homes)
- 40 PV systems – City of Phoenix (Fillmore Gardens)

12. Innovative Renewable Energy Projects

Pursuant to Decision No. 72022, APS received approval from the Arizona Corporation Commission to provide up to \$25 million in lifetime commitments to facilitate the installation of innovative renewable project technologies that are not yet cost competitive in the market, but nonetheless demonstrate value in the deployment of distributed energy resources. APS recognizes that innovation is integral to a maturing distributed renewable energy industry and while no innovative technology projects were funded in 2011, APS has issued a Request For Information in early 2012 as the first step in determining expertise and offerings for viable early-commercial renewable projects which may also integrate energy efficiency (EE) and demand response (DR) components into overall project proposals.

III. Renewable Rate Programs

A. Green Choice Rate Program

In 2011, APS continued its three existing Green Choice rate offerings which were approved by the Commission in Decision No. 71276 in September 2009. In all cases, participating customers pay a premium on their bills based on actual energy produced at Renewable Generation facilities that are part of the APS portfolio. GPS-1 provides a fixed level of renewable-generated power that the customer subscribes to each month in 100 kWh blocks. GPS-2 varies month to month by customer and is based on a percentage of a customer's monthly usage. Finally, GPS-3 is a single block of renewable-generated power that can be used for special events.

At the close of 2011, 3,007 customers were subscribed to the family of Green Choice rates. Sales for the year were approximately 134,729 MWh, and revenue collections were \$538,275.³² The revenue associated with the Green Choice rates ultimately facilitates the development of additional renewable resources beyond the renewable energy developed by APS to meet RES compliance requirements.

Figure E

<u>2011 Green Choice Results</u>		
	<u>2010</u>	<u>2011</u>
Customers	3,277	3,007
MWh Sales	122,764	134,729
Revenue Collections	\$485,721	\$538,275

1. Green-e Certification

Green-e is a national certification and verification program for renewable energy that was developed and offered by the Center for Resource Solutions, a national nonprofit organization. This certification indicates that the renewable energy meets environmental and consumer protection standards. Through certification, the APS Green Choice program utilizes the Green-e logo on the APS website. All Green Choice renewable energy sold under APS's GPS-1 and GPS-2 rate plans are Green-e certified. Green Choice Rate energy sales certification through the CRS program was effective September 26, 2008.

³² Green Choice sales are subtracted from total Renewable Generation, and cannot count toward compliance with RES targets.

B. Total Solar Rate Program

Solar-3, the Total Solar Rate, was designed to offer customers the option to purchase 50 percent or 100 percent of their usage from solar resources.³³ In 2011, the rate collected less than \$1,000 in revenue.

³³ Approved by the Commission in Decision No. 69663 (June 28, 2007).

IV. Additional RES Components

A. Customer Outreach

The 2011 APS customer outreach budget was \$3.3 million in 2011. APS's outreach objectives sought to optimize an impact across four primary goals:

- I. Develop and promote educational opportunities and curriculum;
- II. Protect potential customers' interests and encourage participation through relevant, informational messaging aimed at the value of DE for individuals' and Arizona's energy goals;
- III. Improve customer satisfaction; and
- IV. Increase messaging transparency for improved customer awareness and acceptance of DE technologies among APS's customer base.

APS featured its DE programs at over 250 community events, public meetings, trade shows and retail events throughout the state. The continued SmartPower partnership in 2011 provided customers access to a Solar Coach, a third-party objective consultant who helped them navigate the DE decision-making process. APS notably expanded its educational efforts by improving the Qualified Solar Installer Program (QSI) and introducing the Trained Solar Installer Program (TSI). These two educational programs not only improved business interactions between developers, customers, and APS, but also provided valuable professional training for Arizona's local workforces.

The overall objectives for APS's 2011 customer outreach efforts are described in more detail below.

1. Education and Educational Curriculum

In 2011, APS continued its QSI Program and its TSI Program expanding the Company's educational outreach efforts. Both programs were offered quarterly.

The QSI program is designed to better allow APS residential customers to choose highly-trained, well-qualified PV and SWH installers and to help distinguish QSI-designated workers in the marketplace. QSI-designated professionals must successfully complete a training regimen delivered by Solar Energy International and APS on topics ranging from system design and installation, sales and ethics, and APS program requirements. Participants must also maintain the applicable Arizona Registrar of Contractors license(s) and high customer satisfaction ratings. The 2011 program featured updated curriculum and improved content delivery. Residential customers currently have 58 PV and 19 SWH QSI companies among which they can choose, 26 of which were newly certified in 2012. Customers are encouraged to choose a QSI when installing solar through aps.com and other DE program collateral and through strategic partners.

APS launched its new TSI to train unemployed and displaced workers in order to help them secure jobs with solar installers. APS worked with workforce agencies that screened

candidates and provided a stipend for each student. Participants who successfully completed the eight day training qualified to sit for the National Association of Board Certified Energy Practitioners (NABCEP) entry level exam. A total of 48 students successfully completed the course in 2011.

To further assist the successful TSI students with job placement, APS created a private webpage on which they could post their resumes for hiring QSI companies to access. Only current QSI companies had access to the site.

2. Protecting and Encouraging Customer Participation

APS modified program collateral and website content based upon messaging research conducted with APS customers in order to protect program participants and provide details helpful for making informed decisions. Messaging was refreshed to focus on savings, financing options, and customer tools to address customers' perceived complications of DE system purchasing decisions.

APS focused on web content and program collateral to inform potential customers about the Energy Star® and Solar Home Program, the Solar Ready homebuilder program, and the Schools & Government Program.

APS also leveraged low and no cost bill messaging add-ins throughout the year including bill inserts, on-bill messaging, and monthly newsletters to advertise PV and SWH incentives, Solar Coach consultations, and the QSI training program.

Through the continued partnership with SmartPower, nearly 1,300 customers consulted with a Solar Coach, a neutral, third-party consultant. SmartPower engaged 15 APS communities to officially join the Arizona Solar Challenge. These communities issued a proclamation or other formal pledge to work towards achieving a five percent household penetration rate for rooftop solar installations by 2015. Four communities, including Buckeye, Cottonwood, Goodyear and Sun City West exceeded the five percent goal by year-end, and Clarkdale accomplished the goal in January, 2012.

3. Customer Satisfaction

APS continues to solicit feedback from customers to refine program tools that are available as resources to help customers who are deciding to install DE systems.

In response to customer feedback, APS made numerous refinements to the online application and status-checking tool on its aps.com website.

APS optimized online tools to better clarify how a customer can "go solar" and provides assistance for interested customers through their decision making process. Content was refreshed on the Solar Calculator, as well as on the Arizona Goes Solar³⁴ website and

³⁴ www.ArizonaGoesSolar.org. In 2011, this website received a total of 9,458 unique site visits.

aps.com³⁵ in order to better educate customers on the programs and to increase transparency on incentive levels and funding availability.

Specifically, these enhancements included:

- Updating content for the Solar Calculator, which provided customers with an idea of how quickly a return on investment would be realized given system size and current incentive levels;
- Web content and collateral messaging refinements which highlighted the savings incentives and tax rebates offered;
- The Arizona Goes Solar and aps.com websites were refreshed weekly in order to clearly communicate the most current incentives and available funding;
- Program fact sheets and brochures were updated to include information on various financing options available to customers;
- A link was provided on the aps.com website to request a consultation with a Solar Coach for customers who needed more assistance evaluating system and financing options;
- To help residential customers identify licensed, knowledgeable installers, APS provided its QSI list on its aps.com website, which provided customers with assurance that these companies had successfully completed high-level training, maintained current license(s), retained appropriate bonding and insurance, and received a high customer satisfaction rating.

4. Program Awareness

In the past, APS's initial marketing focus was to increase overall customer awareness and build acceptance within the DE program. In 2011, APS shifted its awareness efforts onto providing materials with increased transparency on the aps.com Website. Program awareness efforts were developed and implemented through an e-mail campaign describing the Schools & Government program among potential customers. E-mail outreach was subsequently followed by a small targeted mail campaign, professional association, meetings, and customer calls by APS Community Development representatives.

³⁵ www.aps.com/gosolar.

B. Research, Commercialization & Integration

APS continued to develop and mature several ongoing studies in 2011 while initiating several new areas of study under the 2011 Research, Commercialization and Integration (RC&I) budget. APS's renewable portfolio growth in recent years to meet RES compliance requirements has created the need to study how best to integrate a higher penetration of intermittent utility-scale and distributed renewable resources into its electrical transmission and distribution system. Because of the variability inherent in renewable resources, an updated knowledge base is required in order to schedule generation assets to effectively meet reserve requirements, maintain system power quality on a minute to minute basis, and ensure APS's electrical service to customers remains safe and reliable. Wind speed decreases or overhead clouds regularly cause an instantaneous drop in available system load, while fast wind gusts create an instantaneous spike in energy output. System-wide impacts are therefore felt on transmission and distribution equipment not originally designed to handle a high penetration of variable resources.

Improved planning and forecasting within a high penetration environment will enable energy costs to remain low by minimizing the unnecessary cycling of spinning and non-spinning reserves and improving the accuracy of energy scheduling services. The cost of forecasting multiple 15 MW utility-scale facilities can be greater than forecasting a single 100 MW wind

In 2011 APS took delivery of its first Battery Energy Storage System at Elden Substation in Flagstaff.

facility, and improved methodologies for forecasting the load impacts of unavailable distributed PV generation assets are similarly needed. Additionally, through its studies, APS has sought a deeper understanding of the limitations of existing power quality devices – such as transformer tap changers, switched capacitors, and reclosers – as well as the capabilities of newer voltage regulation and balancing devices designed to mitigate the variable impacts of renewable resources.

APS continues to move its Flagstaff initiatives forward in order to understand and develop technical processes which utilize the best value from distributed generation resources while providing high grid reliability to customers. APS's "living laboratory" provides actual data with insight into the system impacts and potential additive value of distributed generation on the installed utility distribution system. This development is a one of a kind opportunity in the United States to shed light on the actual system impacts resulting from high penetration variable distributed generation. This work is a combination of the Department of Energy (DOE) High Penetration Solar Deployment Study and the Community Power Project.

In addition to the completion of residential installations for the Community Power Project-Flagstaff Pilot and study data acquisition systems, APS took delivery of its first Battery Energy Storage System in Flagstaff at its Elden Substation. This installation is the base for the first phase of the energy storage demonstration project in Flagstaff. Collectively, APS refers to these studies as the Community Power Project. The Flagstaff Project was designed to create a platform in which the future distribution system (including modern technologies such as distributed generation, smart grid, and energy storage) can be studied as one integrated system.

1. Ongoing Studies

- *High Penetration Photovoltaic Deployment Study*

The High Penetration Photovoltaic Deployment Study (HPS) study began in October 2009 as a collaborative effort between APS, The General Electric Company, Arizona State University, National Renewable Energy Laboratory, and Via Sol Energy Solutions. The project is focused on understanding the effects of high-penetration solar electricity on the design and grid operation of localized electricity distribution systems. By demonstrating the impact on a single utility distribution feeder, APS's knowledge gained will improve the resilience of distribution infrastructure, enable advanced feeder designs which may mitigate the effects of PV variability and intermittency, and enhance the value of large PV deployments.

Phase I was completed in 2011 and Phase II is expected to be complete in mid-2012. Key activities and deliverables from this project in 2011 include a high level distribution feeder baseline electrical model, customer and solar PV load models, field data acquisition package prototypes design, data collection and storage methodology, and initial evaluations of advanced grid-support inverters.

The HPS is one of six DOE grant recipients nationwide seeking to address high concentrations of distributed solar generation. Additional information on this project is available at <https://solarhighpen.energy.gov>.

- *Energy Storage Demonstration Project*

In November, 2011, APS accepted the delivery of its first large-scale Battery Energy Storage System. This milestone marks the first step in a two-part project which will demonstrate the value of integrated energy storage. For the demonstration project, APS is deploying a 500 kW lithium-ion battery with ABB grid interfaces. The battery is capable of providing three hours of capacity storage for a total availability of 1.5 MWh when fully charged.

One significant aspect of battery storage being studied by the demonstration project is its ability to provide load profile smoothing to mitigate the impact of solar energy's natural variability and intermittency. Additional insights will include battery energy storage system's contribution to voltage output stabilization, peak load reduction, and deferral of distribution asset upgrades.

The first phase of the project is located at APS's Eldon Substation in Flagstaff, and the second phase is being conducted in collaboration with the HPS study at the Doney Park Renewable Energy site.

- *PV Variability and Intermittency Study*

APS initiated this study in 2010 to collect targeted solar and PV production data. The study's intent is to track how power, voltage, and current fluctuate in PV systems as well as what causes each change to occur. In 2011, APS continued its efforts by establishing data acquisition systems and proceeding to acquire extensive weather and PV system performance data from APS's Prescott Solar Facility. Preliminary data has now been reviewed and analyzed in collaboration with Northern Arizona University, and a draft report

from the partnership's analysis will be complete in early 2012. APS will be coordinating with various national laboratories on the final results.

- *Electric Power Research Institute*

In 2011 APS continued its collaboration with the Electric Power Research Institute (EPRI). APS's involvement in key EPRI research projects provides an opportunity to work with utility leaders and industry partners across the US in addressing renewable generation, renewable distributed generation, and associated energy issues. An alliance with EPRI allow APS to leverage a national knowledge-base to cost-effectively apply industry best practices to the Flagstaff study initiatives and elsewhere.

Beginning in 2011, APS committed to a three-year participation in EPRI's concentrating solar program which is currently being developed at the SolarTAC facilities in Colorado. This program is aimed at advancing a better understanding of concentrating solar technologies' associated production, operations, and maintenance costs as well as reliability considerations.

- *AzSMART (Arizona State University)*

AzSMART is an analysis system tailored to examine the successful roll-out of a solar energy infrastructure in Arizona and to develop the required electric grid technologies needed to enable such a solar infrastructure. APS has continued its involvement in this project by committing to Phase III funding and participation. This is the final phase committed to by APS under an R&D agreement in 2009 to support the initial three phases of the project.

- *Department of Energy Thermal Storage Demonstration*

APS continued to participate in a monitoring role with U.S. Solar Power Corporation on a five-year thermal research project with a potential future demonstration at the Saguaro Solar facility. The project's primary objective is to maximize cost-effective, commercially-proven energy storage for Concentrated Solar Power (CSP) power plants. This project has completed the second phase in prototyping of the technologies and is awaiting DOE comments to move forward with the final phase for demonstration of the technologies developed. The technical project team continues to facilitate APS's understanding of alternative, economically viable storage technologies. Partners in this project include U.S. Solar Holdings, The Georgia Institute of Technology, and the University of Arizona.

2. New Studies

- *Solar Water Heating Studies*

APS began developing the scope for two studies to better understand the value provided by SWH systems and best practices for monitoring these systems. While SWH systems can be a cost-effective method for reducing energy and incorporating renewable energy resources, uncertainty remains for how to properly validate the full load reduction impact provided by a SWH system. Current challenges to be addressed through the Solar Water Heating studies include the impacts of residential load variations, hot water use patterns, seasonal impacts, and regional weather variability. Additionally, APS is interested in mitigating the high cost and effort currently required for system monitoring and measuring production offsets.

Initial project groundwork conducted in 2011 will allow APS to review emerging methodologies for monitoring SWH systems to better understand full KWh output, system operation, and system reliability. This will include addressing potential uses of APS's Automated Metering Infrastructure (AMI) system for the purpose of monitoring SWH impacts. APS has also contracted with a consultant to provide a thorough review and analysis of individual residential load reduction, cumulative load reduction on the APS system due to current installations, and future potential load reduction due to forecasted SWH systems installations.

- *Solar Thermal Augmentation*

In 2011, APS completed its solar thermal study by contracting with the consulting firm CH2M Hill in order to determine the value and potential for solar thermal augmentation of APS's natural gas generation units. The study focused on APS's Redhawk Combined Cycle Facility and utilized three different solar thermal technologies for potential input. The goal of the study was to evaluate the generation potential, benefits and costs of augmentation, and engineering and design parameters required to integrate the solar resource. The following components were also reviewed:

- Key augmentation projects and technology development in the US and worldwide;
- Assessment of the overall value and impacts provided by solar thermal augmentation technology;
- Costs and benefits from the addition of solar augmentation considering APS's generation dispatch, resource mix and renewable energy requirements; and
- Integration options and an evaluation of APS's best opportunities for solar augmentation.

Appendix

Appendix A: RES Banking Reconciliation

Table 12:
2011 Renewable Energy Credit (REC) Bank Reconciliation

1		MWh	1
2		(energy)	2
3			3
4	2010 REC bank balance	326,604	4
5			5
6	RES Requirements		6
7	Total 2011 RES compliance requirement	846,310	7
8	2010 bank applied to RES requirement ¹	326,604	8
9	Remaining RES requirement (line 7 - line 8)	519,706	9
10			10
11	Renewable Energy Portfolio	Contribution	11
12	Wind	537,989 49%	12
13	Geothermal	72,143 7%	13
14	Biomass	139,688 13%	14
15	Landfill Gas	17,871 2%	15
16	APS Solar ²	44,605 4%	16
17	Distributed Energy	286,519 26%	17
18	Subtotal: Renewable Portfolio	1,098,815	18
19			19
20	Year-End REC Bank Balance		20
21	Current year renewable energy portfolio (line 18)	1,098,815	21
22	Less current year remaining RES requirement (line 9)	519,706	22
23	Less Green Choice energy sales	134,729	23
24	Current year ending REC bank balance (line 21 - line 22 - line 23)	444,380	24
25	Notes to Table 12:		25
26	¹ APS has included the full amount of the prior year's balance.		26
27	² Includes RES multiplier for in-state solar installations prior to December 31, 2005.		27

Appendix B: Schools Funded from 2009 UFI Funds – Total Production

	School Funded from 2009 UFI Funds	In-service Date	Energy Produced in 2011 (kWh)
1	Sedona Oak Creek Unified School District (Sedona Red Rock High School)	11/16/2010	386,094
2	Scottsdale Unified School District #48 (Desert Mountain High School)	8/26/2010	1,721,723
3	Agua Fria Unified School District (Desert Edge High School)	9/27/2010	1,328,587
4	Agua Fria Unified School District (Verrado High School)	7/12/2010	891,319
5	Paradise Valley Unified School District (North Canyon High School)	10/22/2010	451,578
6	Paradise Valley Unified School District (Pinnacle High School)	11/1/2010	194,209
7	Paradise Valley Unified School District (Shadow Mountain High School)	11/3/2010	1,486,338
8	Deer Valley Unified School District (Park Meadows Elementary School)	7/2/2010	244,274
9	Scottsdale Unified School District #48 (Copper Ridge School)	8/31/2010	667,761
10	Casa Grande Elementary School District #4 (Cholla Elementary School)	11/11/2010	510,996
11	Scottsdale Unified School District #48 (Chaparral High School)	2/18/2011	116,439
TOTAL PRODUCTION IN 2011:			7,999,318

Appendix C: Independent Monitor Certifications

Merrimack Energy Group, Inc.

February 3, 2012

Mark Mullins
Manager Resource Acquisition
Arizona Public Service Company
400 N. 5th Street, Mail Station 9674
Phoenix, AZ 85004

Re: Certification Letter of Merrimack Energy Group, Inc. as Independent Monitor for Arizona Public Service Company's ("APS") 2011 Request for Proposals ("RFP") for Renewable Small Generation Resources

Dear Mr. Mullins:

Merrimack Energy Group, Inc. ("Merrimack Energy") has served as Independent Monitor ("IM") for Arizona Public Service Company's 2011 Request for Proposals ("RFP") for Renewable Small Generation Resources. This RFP is the second in a series of solicitations designed to implement APS' Small Generation Program. Merrimack Energy's role as IM began during the development of the solicitation process and associated documents and continued through the final selection of the preferred resources.

The role of the IM in this competitive procurement process is to ensure APS' solicitation of renewable small generation resources ("RFP Process") is conducted in a fair and unbiased manner in accordance with the APS Renewable Energy Competitive Procurement Procedure ("CPP") dated April 10, 2007, as well as the procurement provisions of the Arizona Corporation Commission's Resource Planning and Procurement Rules (Arizona Administrative Code R14-2-705 and R14-2-706). The CPP outlines the role of the Independent Monitor and also describes the requirements of the competitive bidding process, including the evaluation and selection process. The CPP applies only to the competitive procurement process for any solicitation to meet Arizona Public Service Company's renewable energy needs. The Commission's Resource Planning and Procurement Rules also identify the IM selection process and responsibilities. The tasks and services performed by Merrimack Energy are consistent with the requirements of the CPP, the Resource Planning and Procurement Rules and Scope of Work of the IM prepared by APS and agreed to and executed by both parties.

Merrimack Energy certifies that the procedures and processes followed by APS in implementing the 2011 Renewable Small Generation Resources solicitation process are consistent with the requirements of the CPP and the Resource Planning and Procurement Rules. The RFP contains a detailed description of the product(s) requested, provides a schedule for the entire process including the dates for bid submission, short list selection and final award, provides detailed instructions to bidders in terms of filing requirements, includes a description of the bid evaluation and selection process and evaluation criteria, and provides a copy of the proforma Power Purchase and Sale agreement. The bid evaluation and selection processes and methodologies represent a fair, consistent and unbiased evaluation and selection process. The procedures and processes were appropriately applied by APS and are consistent with

155 Borthwick Ave. Suite 101
Portsmouth, New Hampshire 03801
Telephone: 603-427-5036 Facsimile: 603-427-5031



3100 Zinfandel Drive
Suite 600
Rancho Cordova, CA 95670
916.631.3200 phone
916.852.1073 fax

March 20, 2012

VIA E-MAIL

Mr. Mark Mullins
Manager, Resource Acquisition
Arizona Public Service
400 North 5th Street, M.S. 9674
Phoenix AZ 85004
mark.mullins@aps.com

Subject: CERTIFICATION OF THE ARIZONA PUBLIC SERVICE ("APS") 2011 REQUISITION OF A 15 MWAC
PV FACILITY FOR THE AZ SUN PROGRAM

Dear Mr. Mullins:

This letter serves as a certification by Navigant Consulting Inc. ("Navigant") concerning our review of the procurement process performed by APS (the "Process") relative to the above mentioned 2011 Requisition of a 15 MWac PV Facility for the AZ Sun Program (the "Requisition").

APS retained Navigant to serve as its independent auditor for the Process as required under the APS Renewable Energy Competitive Procurement Procedure dated April 10, 2007 (the "Procedure").¹ The Procedure identifies the policies and procedures that APS will use to procure renewable energy through both request for proposal and bi-lateral purchase approaches. The Procedure also identifies the scope of work for the independent auditor that is required under the RES Rules.

As independent auditor/monitor, we monitored and evaluated the Process, including review of the solicitation materials, audit of the evaluations and preparation of a summary report to APS (the "2011 Requisition Report").² As described in the 2011 Requisition Report, the Requisition was similar to the solicitation of "Turnkey" offers that APS performed under the 2010 Request for Proposals for Photovoltaic Generation Resources (the "2010 RFP" or "RFP"). Under the 2010 RFP, several Turnkey offers were received and selected for short-listing and final negotiations. Due to this past success and very limited time available for proposal evaluation and facility implementation, APS chose to solicit proposals from five (5) firms that had either submitted Turnkey offers under the 2010 RFP or unsolicited offers, and had achieved high scores in the qualitative evaluation phase covering areas

¹ Arizona Public Service Company, Inc., Renewable Energy Competitive Procurement Procedure, dated April 10, 2007.

² Independent Auditor Report for the Requisition of a 15 MWac PV Facility for the AZ Sun Program, Navigant Consulting Inc., April 11, 2011.

Mr. Mark Mullins
March 20, 2012
Page 2 of 3

such as credit, technology, financial risk, etc. APS also stated that only firms which knowingly possess a secure PV panel supply chain and that can bring significant resources to meet the facility objectives would be considered.

Since the Requisition occurred outside of the typical APS annual renewable solicitation timeframe and was limited to only five (5) potential Respondents, the Requisition was treated as a bilateral opportunity. The Procedure requires that bilateral opportunities be evaluated against the qualitative and quantitative results from the last competitive procurement solicitation as well as current market data and trends. Accordingly, APS evaluated the proposals using the quantitative and qualitative evaluation methodologies and market data that were used for evaluation of proposals in response to the 2010 RFP. A detailed description of these methodologies and data is provided in our report concerning the 2010 RFP process (the "2010 Report"). Our review of the Requisition focused on comparing the APS evaluation methods and results for the winning proposal against the APS evaluation methods and results for the 2010 RFP. We did not perform extensive review of the solicitation materials and process since the Requisition was not a full competitive process.

As a result of this work, we certify that:

the Process was performed consistent with the evaluation processes performed for the 2010 RFP, the requirements of the Procedure, and with other power supply offer evaluation processes we have performed or observed.

All necessary and typical costs (bid, integration, transmission, imputed debt) were considered.

The short-listed Respondents were given equal opportunity to meet with APS and provide additional information to improve their offers.

The cost of the winning proposal as selected by APS was at or below the cost of offers that were shortlisted and selected as finalists from the 2010 RFP on a \$/kw, \$/MWH and Bid Cost as a Percent of Avoided Cost basis.

This Letter summarizes our review and conclusions concerning the Process as of the date of this Letter. In performance of our review, we did not attempt to influence the preparation of the solicitation documents, nor the performance of the evaluation by APS, nor the discussions between APS and the Respondents, nor the selection of offers by APS. We did not perform any independent alternate evaluation or selection of offers. We relied on documents, correspondence, analyses and information provided to us by APS. We did not review the detailed analyses of all the offers, but rather only a representative sample of the offers that we felt would indicate whether or not the evaluations were performed on a fair and reasonable basis (for example, power purchase versus asset purchase, shortlisted versus not shortlisted). While we believe these source documents to be reliable, they have not been independently verified for either accuracy or validity, and no assurances are offered with respect thereto. Similarly, we were not a party to phone conversations or meetings that APS may have had with the Respondents.

This Letter considers only the reasonableness and fairness of the Process. It does not represent any endorsement of the offer selected by APS, nor any guarantee that the offer is valid or will be

Mr. Mark Mullins
March 20, 2012
Page 3 of 3

ultimately delivered, nor that the offer will satisfy the Annual Renewable Requirements of APS. We make no representations, warranties or opinions concerning the enforceability or legality of the laws, regulations, rules, agreements or other similar documents reviewed as part of this evaluation. We express no recommendation, opinion, or advice as to the wisdom, desirability, or prudence of contracting with the Respondents, or to the action any person should take in connection with the offer, issuance, purchase, or sale of securities or contracts related to APS or the Respondents. Navigant and its employees are independent contractors providing professional services to APS and are not officers, employees, or agents of APS.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul D. Maxwell", with a stylized flourish at the end.

Paul D. Maxwell
Director



3100 Zinfandel Drive
Suite 600
Rancho Cordova, CA 95670
916.631.3200 phone
916.852.1073 fax

March 27, 2012

VIA E-MAIL

Mr. Mark Mullins
Manager, Resource Acquisition
Arizona Public Service
400 North 5th Street, M.S. 9674
Phoenix AZ 85004
mark.mullins@aps.com

Subject: CERTIFICATION OF THE ARIZONA PUBLIC SERVICE ("APS") 2011 AZ SUN REQUEST FOR
PROPOSAL SOLICITATION

Dear Mr. Mullins:

This letter serves as a certification by Navigant Consulting Inc. ("Navigant") concerning our review of the procurement process performed by APS (the "Solicitation") relative to the above mentioned 2011 AZ Sun Request for Proposals (the "2011 AZ Sun RFP").

For procurement of renewable energy, APS has developed the APS Renewable Energy Competitive Procurement Procedure (the "Procedure").¹ The Procedure identifies the policies and procedures that APS will use to procure renewable energy through both request for proposal and bi-lateral purchase approaches. The Procedure also identifies the scope of work for the independent auditor that is required under the RES Rules.

APS is also subject to Arizona resource planning rules that specify requirements for procurement and independent monitor selection and responsibilities (the "Resource Planning and Procurement Rules")² Section R14-2-705 of the Procurement Rules ("Section 705") allows APS to procure wholesale power through a wide variety of competitive procurement methods including purchase from a non-affiliated entity through an auction or an RFP process. Section 705 also requires APS to engage an independent monitor to oversee all RFP processes for procurement of new resources.

For the Solicitation, APS retained Navigant to serve as the independent monitor as required under the Procedure and the Procurement Rules. As independent monitor, we monitored and evaluated

¹ Arizona Public Service Company, Inc., Renewable Energy Competitive Procurement Procedure, dated April 10, 2007.

² Arizona Corporation Commission, Docket No. RE-00000A-09-0249, Decision No. 71722, Arizona Administrative Code ("A.A.C.") R14-2-705.

the Solicitation, including review of the solicitation materials and a sample of the evaluations performed by APS. We also prepared a summary report to APS (the "2011 AZ Sun Solicitation Report").³

As a result of this work, we certify to the items listed below. Capitalized terms not defined herein are defined in the 2011 AZ Sun Solicitation Report.

- The materials associated with the Solicitation were understandable, comprehensive and consistent with the requirements of the Procedure and with other request for proposals for renewable power supply that we have reviewed;
- The milestone dates, durations and sequencing described for the solicitation and evaluation processes were reasonable;
- The terms of the Confidentiality Agreement, and of the standard form EPC Agreement prepared by APS were reasonable and consistent;
- The type and level of information required for the Response Forms on PowerAdvocate was reasonable;
- The submittal instructions and non-refundable bid fee were reasonable and the description of the evaluation process was clear.
- The pre-bid webinar presentation was clear and consistent with the Procedure and the RFP, and the questions and answers made available on PowerAdvocate were also clear and consistent and valuable in further defining the solicitation.
- The evaluations associated with the Solicitation were performed in a logical, consistent, and comprehensive manner, and were consistent with the requirements of the Procedure and with other power supply offer evaluation processes we have performed or observed.
- The threshold and screening processes were performed on a consistent and fair basis. The determination of the avoided cost of each offer through the use of production cost modeling and the cost of a combustion turbine was consistent and reasonable. The selection of a shortlist from amongst the lowest cost proposals from a quantitative perspective, coupled with lowest risk proposals from a qualitative perspective was reasonable.
- The subsequent expansion of Project size and the request for Refreshed Proposals was reasonable. The detailed evaluation of the Refreshed Proposals and Final Refreshed Proposals was consistent and reasonable. The Short-listed Respondents were given equal opportunity to meet with APS under a common agenda, present their proposal and participate in detailed questions and answers directly with APS. APS asked and responded to questions in a consistent manner at each meeting. Selection of one Final Refreshed Proposal for final contracting based on the combination of POAC and risk rankings was reasonable.
- APS achieved compliance with Section 705 of the Procurement Rules since the procurement was an RFP process and APS retained an independent monitor.

³ Independent Auditor Report for the 2011 AZ Sun Solicitation, Navigant Consulting Inc., March, 2012.

Mr. Mark Mullins
March 27, 2012
Page 3 of 3

In summary, APS performed the Solicitation in compliance with both the Procedure and the Procurement Rules. The Solicitation was conducted in a fair, transparent and equitable manner. There is no evidence that any unfair advantage or disadvantage was given to any Respondent.

This Letter summarizes our review and conclusions concerning the Solicitation as of the date of this Letter. In performance of this review, we did not attempt to influence the preparation of the solicitation documents, nor the performance of the evaluation by APS, nor the discussions between APS and the Respondents, nor the selection of proposals by APS. We did not perform any independent alternate evaluation or selection of proposals. We did not review the detailed analyses of all the proposals, but rather only a representative sample of the proposals that we felt would indicate whether or not the evaluations were performed on a fair and reasonable basis (for example, fixed axis versus tracking, crystalline versus thin film). For some of our work, we relied on documents, correspondence, analyses and other information provided to us by APS. While we believe this information to be reliable, it has not been independently verified for either accuracy or validity, and no assurances are offered with respect thereto. Similarly, we were not a party to phone conversations, meetings or other communication that APS may have had with the Respondents, except for the Threads on PowerAdvocate and the introductory meeting that APS held after shortlist selection with each of the three (3) Shortlisted Respondents.

This Letter considers only the reasonableness and fairness of the Solicitation. It does not represent any endorsement of the offer selected by APS, nor any guarantee that the offer is valid or will be ultimately delivered, nor that the offer will satisfy the Annual Renewable Requirements of APS. We make no representations, warranties or opinions concerning the enforceability or legality of the laws, regulations, rules, agreements or other similar documents reviewed as part of this evaluation. We express no recommendation, opinion, or advice as to the wisdom, desirability, or prudence of contracting with the Respondents, or to the action any person should take in connection with the offer, issuance, purchase, or sale of securities or contracts related to APS or the Respondents. Navigant and its employees are independent contractors providing professional services to APS and are not officers, employees, or agents of APS.

Sincerely,



Paul D. Maxwell
Director

Copies of the foregoing delivered
This 30th day of March, 2012 to:

Court Rich
Rose Law Group
6613 N. Scottsdale Road, Ste. 200
Scottsdale, AZ, 85250

Janice Alward
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ, 85007

Steve Olea
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ, 85007

Lyn Farmer
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ, 85007

C. Webb Crockett
Fennemore Craig P.C.
3003 N. Central Ave., Suite 2600
Phoenix, AZ, 85012-2913

Scott S. Wakefield
Ridenour, Hienton & Lewis, P.L.L.C
201 N. Central Ave., Suite 3300
Phoenix, AZ, 85004-1052